



A PROVEN PARTNERSHIP

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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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January 31, 2013

TO: Mack HTCT (D5579) S. P. Membership and Mailing List
 SUBJECT: Mack HTCT SP Meeting Minutes, November 7, 2012, Troy, MI

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Call to order:

Brian Koehler, the chairman of the Mack High Temperature Cyclic Test ASTM Surveillance Panel, called the meeting to order at 10:00 a.m. Eastern time.

Chairman's Comments:

The chairman sent out a meeting announcement in advance. See attachment 1.

Membership:

A sign in sheet was passed around. It can be found as attachment 2.

Approval of Previous Meeting Minutes:

Meeting minutes from November 2, 2011 and May 9, 2012 were discussed. They had been previously posted to the TMC web location. The November meeting minutes noted an attachment 3 that was missing. A correction has since been made. Jerry Gropp moved for acceptance of the corrected meeting minutes. The minutes were accepted.

Range Clutch Synchronizer Components Change

Please see attachment three presented by the Chairman. It documents a synchronizer parts change discussed at a previous meeting. The industry now has 2 months of the old style parts remaining.

Attachment 4 documents recent reference oil results on the new synchronizer parts.

Attachment 5 documents the severity of the test stand which was used to evaluate the new synchronizer parts.

Attachment 6 shows mean and upper/ lower limits of acceptance for the reference oils used.

These documents were discussed in detail. The panel in general wanted to see additional comparison data. The result was a recommendation from the panel that the testing lab should perform its December 2012 routine stand reference using the new synchronizer parts. In addition, the S.P. chair was asked to solicit additional sponsored runs to aid in severity determination. The chair was asked to then host a S.P. meeting to discuss the results and gain hardware approval. It was suggested that future testing be performed on the 155-1 oil blend.

Old Business:

There was no old business to be discussed.

New Business:

There was no new business.

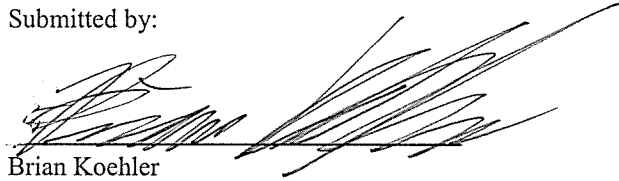
Next Meeting:

The next meeting will be at the call of the chairman.

Adjournment:

Meeting was completed at 10:58 am.

Submitted by:



Brian Koehler
Mack HTCT Surveillance Panel Chairman
Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238-5166

clm
Attachments

**Mack HTCD Surveillance Panel Meeting
Troy, Michigan
Automation Alley Facility
November, 7nd, 2012
10:00 am Eastern**

AGENDA

Call to Order

Chairman's Comments, Brian Koehler, SwRI

Review/ Revise Membership

Motion/ Action Item Recorder

Review Data/ Discuss new Synchronizer parts set (Industry supply of old style parts is now 2 months)

Discuss oil 155 vs. its reblend

Old Business

New Business

Summary of Action Items

Summary of Motions Passed

Next Meeting

Adjournment

**For those wishing to call in: US and Canada toll free: 866-588-1857,
conference code: 2105223588**

CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: 11-7-12

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
	Athey, Allison	Non-Voting	Volvo Powertrain 13302 Pennsylvania Ave. Hagerstown, MD 21742	(301) 573-5684		allison.athey@volvo.com
<i>DRB</i>	Bell, Don	Non-Voting	Aflon Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-6332	(804) 788-6243	don.bell@aflonchemical.com
	Dwornick, Bridget	Non-Voting	RDTA-DP/MS 110, US Army TARDEC 6501 E. Eleven Mile Rd. Warren, MI 48307	(586) 282-4221	(586) 282-4244	bridget.dwornick@us.army.mil
	Bryson, Tom	Voting	Mack Trucks, Inc. 13302 Pennsylvania Avenue Hagerstown, MD 21740	(301) 790-5454	(301) 790-6744	
	Comfort, Allen	Voting	US Army TACOM RDTA-DP/MS 110 6501 E. 11 Mile Warren, MI 48307	(586) 282-4225	(586) 282-4244	allen.s.comfort.civ@mail.mil
<i>JL</i>	Dharte, John	Voting	AAM 1 Dauch Drive Detroit, MI 48211	(313) 758-4687	(313) 758-4237	JDharte@aam.com
<i>Bob</i>	Ellet Steve- Banas, Rob	Non-Voting	ExxonMobil 16486 Laniert Island Sq Leesburg, VA 20176	(703) 669-9910 678-443-3930	(703) 669-9917	Stephen.w.ellet@exxonmobil.com rob.a.banas@exxonmobil.com
<i>TK</i>	Gottwald, Thomas	Voting	Aflon Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-5230		thomas.gottwald@aflonchemical.com
<i>JG</i>	Gropp, Jerry	Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-1223	(440) 347-1555	jlg@lubrizol.com
	Haire, Mike	Voting	Chevron Global Lubricants	(510) 242-2740		mhaire@chevron.com
<i>LH</i>	Hamilton, Larry	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2326		LDHA@lubrizol.com
	Higuchi, Sam	Voting	Aflon Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-5375	(804) 788-6358	samuel.higuchi@aflonchemical.com
	Huron, John	Non-Voting	Chevron Oronite Company 4502 Centerview Drive, Suite 210 San Antonio, TX 78228	(210) 731-5609	(210) 731-5699	huro@chevrontexasco.com
<i>PK</i>	Kanga, Percy	Non-Voting	ExxonMobil Research & Engineering 600 Billingsport Rd. Paulsboro, NJ 08003	(856) 224-2094	(856) 224-3313	percy.r.kanga@exxonmobil.com

CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: _____

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
WK	Kearney, Bill	Non-Voting	Afton Chemical Corporation 2000 Town Center, Suite 1160 Southfield, MI 48075	(248) 380-7596		bill.kearney@aftonchemical.com
KZ	Khaled, Zreik	Voting	General Motors Company Pontiac, MI	(248) 977-9214		khaled.zreik@gm.com
	Koehler, Brian	Voting	Southwest Research Institute 6220 Culebra Road San Antonio, TX 78238-5166	(210) 522-3588	(210) 680-1777	bkoehler@swri.org
	Layton, Kevin	Non-Voting	Afton Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-5363	(804) 788-6358	
	Lind, Don	Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206	(412) 365-1034	(412) 365-1047	dml@astmtmc.cmu.edu
	Lu, WenTong	Non-Voting	Research Institute of Petroleum Processing (RIPP) No. 18, XueYuan Road PO Box 914-19 Beijing 100083 P.R.China	011-86-10-8236-8743	011-86-10-6231-1290	luwf@ripp-sinopec.com
	Marougy, Theima	Voting	Eaton Corporation 26201 Northwestern Highway Southfield, MI 48037	(248) 354-6985	(248) 354-2739	theimaemarougy@eaton.com
	McGlone, Bruce	Voting	Meritor 2135 West Maple Troy, MI 48064	(248) 435-9929	(248) 435-6602	Bruce.McGlone@Meritor.com
	Muransky, Troy	Alt. Voting	Meritor 2135 West Maple Troy, MI 48084	(248) 435-1409		Troy.muransky@meritor.com
	O'Brien, Cheryl	Non-Voting	General Motors Company Pontiac, MI	(248) 343-7347		cheryl.obrien@gm.com
	Parke, Scott	Voting	ASTM TMC	(412) 365-1036		SDP@ASTMTMC.CMU.EDU
	Smith, Dale	Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, TX 78238	(412) 855-6854		dale.smith@intertek.com
	Song, HaiQing	Non-Voting	Research Institute of Petroleum Processing (RIPP) No. 18, XueYuan Road PO Box 914-19 Beijing 100083 P.R.China	011-86-10-8236-8182	011-86-10-6231-1290	songhq@ripp-sinopec.com
	Traden, Angela	Non-Voting	Intertek Automotive Research	(210) 706-1533		angela.traden@intertek.com

CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: _____

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
			5404 Bandera Rd San Antonio, TX 78238			
WVE	Venhoff, Wes	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-4879		WVE@lubrizol.com
	Whitticar, David	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2587	(440) 347-1555	David.Whitticar@lubrizol.com
	Xie, JingChun	Non-Voting	Lanzhou Lube Oil R&D Institute No. 369 YuMen Street XiGu District Lanzhou 730060 GanSu Province			
	Zakarian, Jack	Non-Voting	Chevron	(510) 242-3595		jaza@chevron.com

Greene, Galen NV **BAJF** 973 873 4816 *galen.greene@bestflo.com*
 Tom Boscinek NV *804-788-5202* *TOM.BOSCINEK@AFFINITYCHEMICAL.COM*

BRAD Bubonic NV **LUBRIZOL** 440 347-5305 *BRAD.BUBONIC@LUBRIZOL.COM*

Chris Pongaman NV **LUBRIZOL** 440-347-4225 *christopher.pongaman@lubrizol.com*

Matt Umerley NV **LUBRIZOL** 440-347-4589 *Matthew.Umerley@lubrizol.com*

From: Bryson Thomas [<mailto:thomas.bryson@volvo.com>]
Sent: Wednesday, November 09, 2011 2:17 PM
To: Koehler, Brian P.
Cc: Athey Allison
Subject: FW: Mack part change

The change to the clutch teeth on the sliding clutch will have an effect on keeping the clutch teeth engaged after the synchronizing is completed and teeth engaged during a shift. Care must be taken to use the new low range hub and new high range gear (compare current to new part numbers in the Service Bulletin) with the new range clutch. After switch to new part numbers, the parts can be reused as is currently done. Since the new parts do not affect the synchronizing action, the test severity should not be affected. The shift times might be slightly longer as the clutch moves away from the hub (or gear) when the shift begins, and will be offset roughly the same time after the synchronizing is complete and the teeth engage into the gear (or hub) due to faster engagement. Thanks, Tom



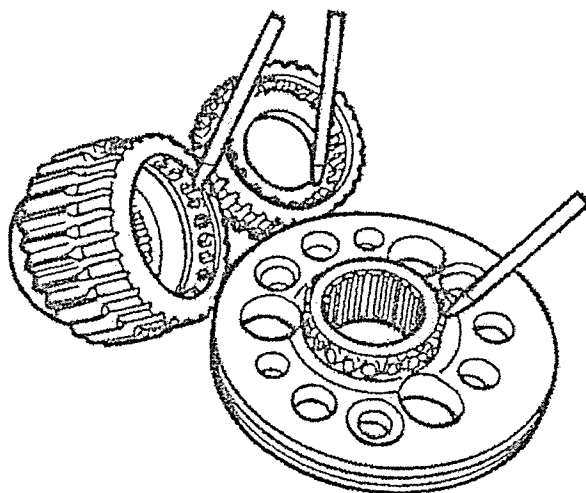
Date	Group	No.	Release	Page
7.2011	431	003	01	1(4)

Revised Range Clutch/Synchronizer
Components

T200, T300

FSB 431-003, Range Clutch Synchronizer Components

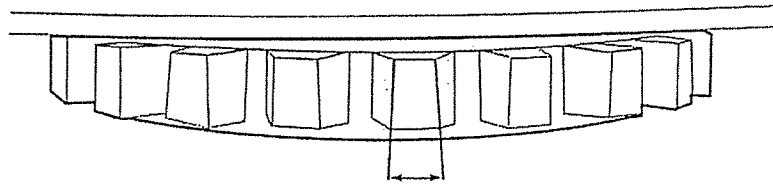
(July 2011)



W466554

The T200/T300 range synchronizer clutch material and tooth design have been changed to improve durability and resist disengagement. A more robust material is now used. Also there is an increase in the dove-tail cut of the clutching teeth in both the synchronizer clutch and mating hi range gear and lo range hub. The new range synchronizer clutch and mating gears were incorporated into production on 05/23/2011, beginning with transmission serial number 3772. The part number for the new range synchronizer clutch is 21636360.

Because of the increase in the dove-tail cut of the clutch teeth between the previous style range clutch and the current production range clutch, the range clutch, the mating high gear and the low gear hubs must be replaced as a set. If any one of the three previous style components is damaged, or when converting from the previous style to the new style range clutch/synchronizer, all three items must be replaced with the current components. For replacement information for these components refer to the appropriate transmission model's service manual or Service Manual "In-Chassis Synchronizer Removal Manual", 10-701.



W405550

Clutch Teeth with Dove-tail Cut

Contents

- "Range Clutch/Synchronizer Components", page 3

Note: Information is subject to change without notice.
Illustrations are used for reference only and may differ slightly from the actual vehicle being serviced. However, key components addressed in this information are represented as accurately as possible.

Range Clutch/Synchronizer Components

The rear compound main drive gear utilizing the thrust washer support system is no longer available for T2080B, T2080D, T2130, T2130B, T2180 and T2180B transmissions (refer to service bulletin "New Rear Compound Mainshaft and Main Drive Gear", SB-322-011). When installing the new range clutch/synchronizer assembly on one of these transmissions, it will be necessary to change the existing main drive gear to the new gear utilizing the ball bearing support. This also requires changing the Lo-range gear hub and mainshaft assembly. Refer to the following charts for a list of required parts.

Synchronizer Service Kit

New Part Number	Description	Replaced Part Number
85132094	Synchronizer Service Kit	85115910

Synchronizer Clutch Assembly Kit

New Part Number	Description	Replaced Part Number
21728520/320KB464	Synchronizer clutch assembly	320KB3147
		320KB3150

Range Clutch/Synchronizer Individual Components

New Part Number	Description	Replaced Part Number
21636360/320KB463	Range clutch/synchronizer	320KB461A
		320KB459A

When installing the new range clutch/synchronizer assembly on a transmission, the following high range gear and low range hub are required:

T2180A, T313LR21, T318LR21, T313-21, T318-21 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649209/751KB4177	High Range Gear	751KB4130

T2080B, T2080D, T2130, T2180, T2180B, T2110BL, T2130B, T310M, T310MLR, T313LR, T318LR, T318, T313 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649207/751KB4176	High Range Gear	751KB4123

T2110B, T310ME, T310ME21 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649204/751KB4175	High Range Gear	751KB4128A

T2080, T2090, T2090LR, T2090L, T2090R, T2090B, T2100, T309LR, T310 Transmissions

New Part Number	Description	Replaced Part Number
21631765/84KC410	Low Range Hub	84KC46
21633318/764KB4278	High Range Gear	764KB4270

T309 Transmissions

New Part Number	Description	Replaced Part Number
21631765/84KC410	Low Range Hub	84KC46
21633320/764KB4279	High Range Gear	764KB4277

Mack Trucks, Inc. engages in a comprehensive program of testing and evaluating to provide the best possible product. Mack Trucks, Inc. however, is not committed to, or liable for updating existing vehicles.

25132811

T309 TRANS	
↘ 21636360	1
↘ 21631765	1
↘ 21633320	1
T310ME, T310ME21	
T2110B	
↘ 21636360	1
↘ 21631781	1
↘ 21649204	1
T2080, T2090, T310	
T2090LR, T2090L	
T2090R, T2090B	
T2100, T309R	
↘ 21636360	1
↘ 21631765	1
↘ 21633318	1
T2180A, T313LR21	
T318LR21, T313-21	
T318-21	
↘ 21636360	1
↘ 21631781	1
↘ 21649209	1
T2080B, T2080D, T2130	
T2180, T2180B, T2110BL	
T2130B, T310M, T310MLR	
T313LR, T318LR	
T318, T313	
↘ 21636360	1
↘ 21631781	1
↘ 21649207	1



Test Monitoring Center



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Transmission Confirmation Report (TCR): HTCT

TESTKEY= 74009-HTCT
 TESTNUMBER= 3 0311
 IND= 150-2
 LTMSDATE= 20120924
 LTMSTIME= 09:01

LAB= SR
 LABCODE= A
 STAND = 3
 LTMSAPP= 3
 DTERPT= 20121001

STRUN = 0311
 DTCOMP = 20120924
 EOTTIME = 09:01

Parameter	Description	Reported Value	Transformed Value	Targets Effective 20060911 to ***		
				Mean	s	Other
CYC	END OF TEST CYCLES	28270	28270	24271	4623	

CYC	N	Y(i)	Severity	
			Limit	Alarm
	N/A	+0.865	±1.960	

Comments:

HARDWARE APPROVAL TEST

*Not synchro parts
 150-2 o.i.*

Test Reviewed: 20121001 13:12

STAND Calibration Expiration Date: N/A
Chart:

TMC Validity Code: NI

STAND is Calibrated: NO

Com1: HARDWARE
Sent to Lab via: EMAILED

Com2: RUN
Data to Ingres via: TMCMA_SQ

Com3:
Locked: NO

Com4:
Reviewed By: reg



Test Monitoring Center



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Transmission Confirmation Report (TCR): HTCT

TESTKEY= 90272-HTCT
 TESTNUMBER= 3 0312
 IND= 155
 LTMSDATE= 20121011
 LTMSTIME= 11:28

LAB= SR
 LABCODE= A
 STAND = 3
 LTMSAPP= 3
 DTERPT= 20121016

STRUN = 0312
 DTCOMP = 20121011
 EOTTIME = 11:28

Parameter	Description	Reported Value	Transformed Value	Targets Effective 20060911 to ***		
				Mean	s	Other
CYC	END OF TEST CYCLES	56470	56470	74489	9662	

Parameter	STAND EWMA							STAND Shewhart						
	Severity				Precision			Severity			Precision			
	N	Z(i)	Limit	Alarm	Q(i)	Limit	Alarm	Y(i)	Limit	Alarm	R(i)	Limit	Alarm	
CYC	70	-0.458	N/A		+0.049	N/A		-1.865	±1.960		+0.632	N/A		

Parameter	INDUSTRY EWMA						
	Severity				Precision		
	N	Z(i)	Limit	Alarm	Q(i)	Limit	Alarm
CYC	281	-0.495	±1.084		+0.006	+0.487	

*New synchro parts.
155 oil.*

Test Reviewed: 20121016 10:39

STAND Calibration Expiration Date: N/A
Chart: N

TMC Validity Code: NI

STAND is Calibrated: NO

Com1: HARDWARE
Sent to Lab via: EMAILED

Com2: RUN
Data to Ingres via: TMCMA_SQ

Com3: CYcs
Locked: NO

Com4:
Reviewed By: sdp

Comment: HARDWARE APPROVAL TEST. NOT FOR CALIBRATION. **Attachment 4**



Test Monitoring Center



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Transmission Confirmation Report (TCR): HTCT

TESTKEY= 82724-HTCT
 TESTNUMBER= 3 0307
 IND= 155-1
 LTMSDATE= 20120602
 LTMSTIME= 01:21

LAB= SR
 LABCODE= A
 STAND = 3
 LTMSAPP= 3
 DTERPT= 20120607

STRUN = 0307
 DTCOMP = 20120602
 EOTTIME = 01:21

Parameter	Description	Reported Value	Transformed Value	Targets Effective 20120521 to ***		
				Mean	s	Other
CYC	END OF TEST CYCLES	60748	60748	65963	15022	

CYC	STAND EWMA						STAND Shewhart						
	N	Z(i)	Limit	Alarm	Q(i)	Limit	Alarm	Y(i)	Limit	Alarm	R(i)	Limit	Alarm
	69	+0.146	N/A		-0.201	N/A		-0.347	±1.960		+0.590	N/A	

CYC	INDUSTRY EWMA						
	N	Z(i)	Limit	Alarm	Q(i)	Limit	Alarm
	280	+0.091	±1.084		-0.151	+0.487	+0.777

*Good smart
stand Ref.
Cold style parts*

Test Reviewed: 20120607 15:23

STAND Calibration Expiration Date: 20121202
 Chart: Y

TMC Validity Code: AC

STAND is Calibrated: YES

Com1:
 Sent to Lab via: EMAILED
 Comment:

Com2:
 Data to Ingres via: TMCMA_SQ

Com3:
 Locked: NO

Com4:
 Reviewed By: sdp

Sample STD Deviation for Mack Trans #3: (Pass Reference Oils)	
Test No.	Test Cycles
03-0307	60,748
03-0296	85,385
03-0285	76,639
03-0273	77,283
03-0262	74,296
Avg. of 5 Pass Ref. Tests	
Avg. Cycles	STDS Dev. (Cycles)
74,870	8,934
Plus 100 cycles = 74,970 150% cycles	
revised 06/08/12	112,305
Calibration Expiration Date: 12/02/2012 or 10 tests	

HIGH TEMP CYCLIC DURABILITY

OPERATIONALLY VALID DATA SET

OIL CODE	TEST PARAMETER	MEAN	S	ACCEPTANCE BANDS		MAX		
				MIN	TO			
150-2	AFW	24271	4623	15210	TO	33332	-1.96	1.96
151-3	AFW	74489	9662	55551	TO	93427	-1.96	1.96
155	AFW	74489	9662	55551	TO	93427	-1.96	1.96

REVISED: 10/26/06

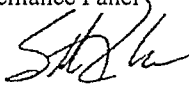


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Test Monitoring Center

Carnegie Mellon University
6555 Penn Avenue, Pittsburgh, PA 15206, USA

<http://astmtmc.cmu.edu>
412-365-1000

MEMORANDUM: 12-014
DATE: May 21, 2012
TO: HTCT Surveillance Panel
FROM: Scott Parke 
SUBJECT: Oil 155-1 Targets

Oil 155-1 is ready for introduction into the HTCT test. Reblends of oils are commonly introduced using the targets from the previous blend until enough data is generated for blend-specific targets. When made aware of the dwindling supply of oil 155 at one of the LRI Surveillance Panel meetings, the HTCT panel briefly discussed and endorsed this introduction plan for oil 155-1. However, in preparing targets for use for the first 155-1 HTCT test, the TMC discovered that the currently in-use targets for 155 were not generated from 155 reference runs, but rather were carried over from oil 151-3 in September of 2004. There are sixteen 155 runs available for target calculation. After consultation with the HTCT and B.03 committee chairs, the TMC has computed targets from these tests that will be used beginning with the next 155-1 run. These targets are shown in the table below. The data from the sixteen tests is attached.

n	Mean	Std	Acceptance Limits	
			Minimum	Maximum
16	65963	15022	36519	95407

SDP/sdp/mem12-014.sdp.doc

cc: Frank Farber

Jeff Clark

<ftp://ftp.astmtmc.cmu.edu/docs/gear/htct/memos/mem12-014.pdf>

Distribution: email

Reported Test Results

TESTKEY	LTMSLAB	LTMSAPP	VAL	IND	LTMSDATE	CYC	CYCyI
58884-HTCT	A	3	AC	155	20060527	59140	-1.812
58886-HTCT	E	1	AC	155	20060711	86287	0.513
58887-HTCT	E	1	AC	155	20080320	64827	-1.000
58885-HTCT	A	3	AC	155	20080708	73284	-0.125
64414-HTCT	E	1	OC	155	20081008	42269	-3.335
66804-HTCT	E	1	OC	155	20081015	37984	-3.778
66805-HTCT	E	1	OC	155	20081026	43043	-3.255
64416-HTCT	A	3	AC	155	20090119	70159	-0.448
66802-HTCT	A	3	AC	155	20090711	62139	-1.278
71461-HTCT	E	1	AC	155	20091014	56563	-1.855
66803-HTCT	A	3	AC	155	20091222	79800	0.550
75645-HTCT	E	1	AC	155	20100515	66310	-0.847
71288-HTCT	A	3	AC	155	20100702	74296	-0.020
74006-HTCT	A	3	AC	155	20101221	77283	0.289
74007-HTCT	A	3	AC	155	20110614	76639	0.223
82723-HTCT	A	3	AC	155	20111128	85385	1.128

HTCT Targets: 155-1 Introduction

Current 155 Targets: Mean = 74489, Std = 9662, k = 1.96

New 155-1 Targets: Mean = 65963, Std = 15022

