

First Quarter CTTRANSIT

Demonstration and Evaluation of Hybrid Diesel Electric Transit Buses

July, August, September 2003

Report No. CT-170-1884-01-03-12



PROGRAM PARTNERS

CTTRANSIT
Allison Transmission
Horiba Instruments Inc.
New Flyer Bus Industries
University of Connecticut
CDOT Division of Research
The East Coast Hybrid Consortium
CDOT Bureau of Public Transportation
Connecticut Academy of Science and Engineering

Prepared By
Stephen W. Warren

Technical Report Documentation Page

1. Report No. CT-170-1884- 01-03-12	2. Government Accession No.	3. Recipients Catalog No.		
4. Title and Subtitle CTTransit Demonstration and Evaluation of Hybrid Diesel Electric Transit Buses - Interim Report 1		5. Report Date September 2003		
		6. Performing Organization Code		
7. Author(s) Stephen W. Warren		8. Performing Organization Report No.		
9. Performing Organization Name and Address CTTransit 100 Leibert Road Hartford, CT 06141		10. Work Unit No. (TRIS)		
		11. Contract or Grant No. CM-005984		
		13. Type of Report and Period Covered Quarterly Interim July, August, September 2003		
12. Sponsoring Agency Name and Address Connecticut Department of Transportation 2800 Berlin Turnpike Newington, CT 06131-7546		14. Sponsoring Agency Code 170-1884		
		15. Supplementary Notes This project is being funded by a Congestion Mitigation Air Quality grant (CM-005984). The project partners are: CTTransit, Allison Transmission, Horiba Instruments, Inc., New Flyer Bus Industries, University of Connecticut, ConnDOT Bureau of Public Transportation, ConnDOT Division of Research, The East Coast Hybrid Consortium, and the Connecticut Academy of Science and Engineering.		
16. Abstract The project goal is to identify the next generation of transit vehicles for future fleet replacement that are cost effective, reliable, produce fewer emissions, and have improved fuel economy compared to the standard heavy-duty diesel powered bus. Data are being collected to produce an estimated life-cycle cost analysis, using emissions information, mileage, fuel economy, power production, brake pad wear, maintenance and repair costs. Bus operator surveys are also being performed. Two 2003 model year 40 ft low floor New Flyer Allison hybrid diesel electric buses were placed into service in June 2003. Performance data collection began on July 1, 2003 on these buses as well as two virtually identical 2002 model year 40 ft low floor New Flyer standard diesel buses. The hybrids and base buses operate in virtually identical conditions on equivalent routes each day.				
17. Key Words Hybrid diesel electric, fuel economy, bus performance		18. Distribution Statement No restrictions. This document is available to the public through the National Technical Information Service, Springfield, VA 22161		
19. Security Classif. (Of this report) Unclassified	20. Security Classif. (Of this page) Unclassified	21. No. of Pages 26	20. Price	

First Quarter
CTTRANSIT
Demonstration and Evaluation of
Hybrid Diesel Electric Transit Buses

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This project was sponsored by the Connecticut Department of Transportation in Cooperation with the U.S. Department of Transportation, Federal Highway Administration. The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented. The contents do not necessarily reflect the views or policies of the Connecticut Department of Transportation or the U.S. Department of Transportation, Federal Highway Administration. This report does not constitute a standard, specification, or regulation. This is an interim report for this project and the reader should be cautioned that the data has not yet been fully analyzed.

First Quarter
CTTRANSIT
Demonstration and Evaluation of
Hybrid Diesel Electric Transit Buses
Summary of Activities and Findings

- Two 2003 model year 40' low floor New Flyer Allison hybrid diesel electric buses were placed into revenue service in mid-June. Performance data collection began on July 1st on these buses as well as two virtually identical 2002 model year 40' low floor New Flyer standard diesel buses.
- The test buses were randomly assigned to operate on every route in the system in order to test their capability and versatility in different operating conditions. These routes vary in passenger loads, operating speed and terrain. In order to make the test data as comparable as possible a standard base diesel bus was assigned to "shadow" a hybrid bus on following trips each day. The hybrids and base buses therefore should operate in virtually identical conditions each day.
- Performance data collected included route and driver assigned, noon temperature and weather, miles operated, fuel and oil consumed, road calls, trouble codes, maintenance performed and cost of maintenance and repair.
- To date the new hybrid buses have operated exceptionally well. They have been popular with our customers and our Bus Operators. Formal surveys of each of these groups is scheduled to take place after six months of vehicle operation.
- During the first quarter the hybrids demonstrated better reliability and lower maintenance costs than both the standard fleet average and the standard diesel base comparison buses. In September the hybrids had 12% better fuel economy than their comparison base buses and 34% better fuel economy than the CTTRANSIT overall fleet average.
- The emissions testing component of the test program will begin in the next quarter. Due to inertia programming issues with the CTTRANSIT chassis dynamometer and the recent market introduction of new mobile emissions measuring equipment, the test protocol was revised to a real world real time in-vehicle evaluation program. The EPA is promoting this test design and it makes our project even more interesting, unique and ground breaking.
- Horiba Instruments Inc. was added as a program partner. They expedited the change from their laboratory fixed gas emissions equipment to their brand new state of the art mobile unit. They also provided us with a reduced cost for the equipment in order to be able to participate in our special project.
- The new Horiba emissions equipment was delivered at the end of September. Setup and training is scheduled for mid-October.
- A significant amount of work was undertaken in September in designing how all the equipment would be positioned and secured in the bus. Cardboard boxes were constructed in identical sizes to the equipment components. They were utilized to determine the best location for each piece of equipment.
- Special fittings were ordered that will be required to connect to the exhaust pipe in order to collect emission gases and particulate matter quantity and particle size. Mobile carts with vibration dampers were constructed to hold various pieces of test equipment.
- A stand alone electrical generator will be purchased in order to power all the test equipment without affecting the bus. It will be positioned along with an air compressor on a small trailer which will be towed by the bus. The small rolling resistance of the trailer will be factored into the data analysis.

CTTRANSIT SEPTEMBER, 2003 HYBRID BUS TEST PROGRAM DATA

Total Fleet	Fleet Total	Fleet Avg
Miles	980,391.00	2,526.8
Fuel - Gallons	275,832.00	710.9
Oil - Quarts	2,775.00	7.2
Road Calls	241	0.6
Maintenance Parts Cost	\$281,242.08	\$728.61
Maintenance Labor Cost	\$137,819.44	\$357.05
Total Maintenance Cost	\$419,061.52	\$1,085.65
Total Cost/Mile	\$0.43	\$0.43
Miles/Gallon Fuel	3.55	3.55
Miles/Quart Oil	353.3	353.3
Miles/Road Call	4,068.0	4,068.0



Base Comparison Buses	201	202	201 & 202	Base Avg	Hybrid vs Base
Miles	4,820	3,681	8,501	4,251	-199.5
Fuel - Gallons	1,134.0	861.3	1,995.3	997.7	-147.15
Oil - Quarts	8.8	1.2	10.0	5.0	-2.9
Road Calls	1	0	1	0.5	0.5
Maintenance Parts Cost	\$573.09	\$515.28	\$1,088.37	\$544.19	-\$289.08
Maintenance Labor Cost	\$171.27	\$116.44	\$287.71	\$143.86	\$4.94
Total Maintenance Cost	\$744.36	\$631.72	\$1,376.08	\$688.04	-\$284.14
Total Cost/Mile	\$0.15	\$0.17	\$0.16	\$0.16	-\$0.06
Miles/Gallon Fuel	4.25	4.27	4.26	4.26	11.80%
Miles/Quart Oil	547.73	3067.50	850.10	850.10	121.6%
Miles/Road Call	4820.00	3681.00	8501.00	8501.00	-4450.00

Hybrid Buses	H301	H302	H301 & H302	Hybrid Avg	Hybrid vs Fleet
Miles	3,727	4,375	8,102	4,051	1,524
Fuel - Gallons	752.4	948.6	1701	850.5	139.6
Oil - Quarts	4.0	0.3	4.3	2.2	-5.0
Road Calls - Hybrid Related	2	0	2	1	0.4
Road Calls Total	2	0	2	1	0.4
Maintenance Parts Cost	\$53.50	\$456.72	\$510.22	\$255.11	-\$473.50
Maintenance Labor Cost	\$143.49	\$154.10	\$297.59	\$148.80	-\$208.25
Total Maintenance Cost	\$196.99	\$610.82	\$807.81	\$403.91	-\$681.75
Total Cost/Mile	\$0.05	\$0.14	\$0.10	\$0.10	-\$0.33
Miles/Gallon Fuel	4.95	4.61	4.76	4.76	34.01%
Miles/Quart Oil	931.75	14583.33	1884.19	1884.19	81.25%
Miles/Road Call - Hybrid Related	1863.5	0	1863.5	4051	-17.0
Miles/ Road Call Total	1863.5	0	1863.5	4051	-17.0

CTTRANSIT
H301 and 201 BUS TEST DATA
SEPTEMBER, 2003

			H301					201							
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG CHANGE
DATE	TEMP.	CONDITIONS													
09/01/03	68	Cloudy	Hold						Tripper			35.1	120	3.42	
09/02/03	66	Cloudy	Hold						Tripper			26.4	142	5.38	
09/03/03	65	Cloudy	Tripper			18.6	68	3.66	Tripper			38.8	145	3.74	-2.17%
09/04/03	67	Cloudy	7	L-1	1138	19.6	89	4.54	11	L-2	1165	51.8	259	5.00	-9.18%
09/05/03	77	Clear	125	N-1	Tripper	46.5	258	5.55	19	N-2	Tripper	21.6	102	4.72	17.50%
09/06/03	75	Clear	119	X-2	1316	26.8	127	4.74	118	X-1	1439	53.1	266	5.01	-5.40%
09/07/03	74	Clear	806	KT-3	1658	51.3	268	5.22	819	KT-2	1631	39	131	3.36	55.53%
09/08/03	68	Clear	Hold						28	U-1	Tripper	8.1	45	5.56	
09/09/03	67	Clear	Hold						99	E-4	Tripper	54.1	184	3.40	
09/10/03	66	Clear	199	E-13	Hold	30.5	135	4.43	200	E-16	Tripper	28.2	130	4.61	-3.98%
09/11/03	74	Clear	115	U-2	1540	33.8	157	4.64	28	U-1	822	42.7	169	3.96	17.36%
09/12/03	75	Clear	30	T-4	1359	29.9	134	4.48	12	T-2	994	36.1	135	3.74	19.84%
09/13/03	68	Light Rain	118	X-1	1439	45.7	254	5.56	119	X-2	1435	52.9	276	5.22	6.53%
09/14/03	75	Rain	Hold						179	Bx-501	1445	34.3	135	3.94	
09/15/03	75	Rain	Hold						24	Q-4	Tripper	39.7	127	3.20	
09/16/03	75	Clear	Hold						125	N-1	Tripper	33.4	138	4.13	
09/17/03	71	Clear	12	T-2	Tripper	30.1	151	5.02	15	T-3	Tripper	35.9	165	4.60	9.15%
09/18/03	73	Cloudy	200	E-16	Tripper	31.0	129	4.16	199	E-13	Tripper	9.2	38	4.13	0.75%
09/19/03	78	Rain	99	E-4	Tripper	35.6	182	5.11	141	E-1	Tripper	56.2	241	4.29	19.22%
09/20/03	77	Clear	119	X-2	1316	50.7	265	5.23	118	X-1	1439	54.7	264	4.83	8.30%
09/21/03	70	Clear	806	KT-3	1658	26.2	116	4.43	819	KT-2	1631	37.7	135	3.58	23.64%
09/22/03	72	Ptly. Cloudy	24	Q-4	1083	30.9	121	3.92	110	Q-3	1749	33.1	125	3.78	3.69%
09/23/03	66	Rain	11	L-2	Tripper	7.1	35	4.93	7	L-1	Tripper	64.9	321	4.95	-0.33%
09/24/03	65	Clear	19	N-2	Tripper	25.9	140	5.41	125	N-1	Tripper	54.8	210	3.83	41.06%
09/25/03	70	Ptly. Cloudy	15	T-3	Tripper	33.5	176	5.25	12	T-2	Hold	15.9	73	4.59	14.43%
09/26/03	71	Cloudy	141	E-1	Tripper	45.7	253	5.54	99	E-4	Hold	13.1	59	4.50	22.92%
09/27/03	67	Ptly. Cloudy	118	X-1	1439	45.2	251	5.55	119	X-2	1316	39.9	189	4.74	17.23%
09/28/03	70	Rain	819	KT-2	1691	28.4	129	4.54	806	KT-3	1658	28.3	123	4.35	4.51%
09/29/03	64	Ptly. Cloudy	24	Q-4	1621	27.4	122	4.45	110	Q-3	1749	57.8	209	3.62	23.14%
09/30/03	69	Clear	28	U-1	822	32.0	167	5.22	115	U-2	1540	37.5	164	4.37	19.33%
Totals						752.4	3,727	4.95				1,134	4,820	4.25	16.57%

CTTRANSIT
H302 and 202 BUS TEST DATA
SEPTEMBER, 2003

			H302					202							
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG CHANGE
DATE	TEMP.	CONDITIONS													
09/01/03	68	Cloudy	404	E-2	1329	32.1	134	4.17	420	E-1	1349	34.5	146	4.23	-1.36%
09/02/03	66	Cloudy	14	F2-1	1035	39.2	180	4.59	10	F2-4	1135	35	156	4.46	3.02%
09/03/03	65	Cloudy	141	E-1	1772	21.3	92	4.32	99	E-4	1479	35.2	153	4.35	-0.63%
09/04/03	67	Cloudy	22	X-2	1126	49.6	269	5.42	36	BX 535 X/C	1339	61.6	320	5.19	4.40%
09/05/03	77	Clear	142	K-2	1550	29	101	3.48	204	K-1	1515	37.9	117	3.09	12.82%
09/06/03	75	Clear	127	YM-1	1400	31.4	124	3.95	Hold						
09/07/03	74	Clear	820	E-1	1749	31.3	140	4.47	Hold						
09/08/03	68	Clear	175	531 U/BDL/N		41.5	188	4.53	29	BX506 N/L	Tripper	10.2	30	2.94	54.02%
09/09/03	67	Clear	14	F2-1	Tripper	41.2	174	4.22	10	F2-4	Tripper	35.4	154	4.35	-2.92%
09/10/03	66	Clear	22	X-2	1089	53.7	293	5.46	Hold						
09/11/03	74	Clear	208	F1-1	Tripper	44.8	224	5.00	13	F1-2	Hold	64.1	323	5.04	-0.77%
09/12/03	75	Clear	23	Q-1	Hold	30	163	5.43	201	Q-2	Hold	5.7	19	3.33	63.00%
09/13/03	68	Light Rain	123	YM-2	1437	34.2	142	4.15	127	YM-1	1288	40.7	202	4.96	-16.34%
09/14/03	75	Rain	824	E-2	1762	33.4	150	4.49	820	E-1	1749	37.3	148	3.97	13.19%
09/15/03	75	Rain	142	K-2	Hold	24.9	103	4.14	204	K-1		35.3	109	3.09	33.96%
09/16/03	75	Clear	10	F2-4	1135	30.6	121	3.95	14	F2-1	1035	51.1	198	3.87	2.05%
09/17/03	71	Clear	29	BX506 N/U		16.6	86	5.18	175	531 U/BD	Tripper	56.8	258	4.54	14.06%
09/18/03	73	Cloudy	36	BX 535 X/C	Tripper	16.4	77	4.70	22	X-2	Tripper	31.3	141	4.50	4.23%
09/19/03	78	Rain	201	Q-2	1532	23.7	120	5.06	23	Q-1	1349	27	100	3.70	36.71%
09/20/03	77	Clear	127	YM-1	1435	45.3	195	4.30	123	YM-2	1437	42.9	179	4.17	3.17%
09/21/03	70	Clear	820	E-1	1749	29.8	141	4.73	824	E-2	1762	6.9	25	3.62	30.59%
09/22/03	72	Ptly. Cloudy	13	F1-2	1130	31.4	165	5.25	208	F1-1	1456	34.6	135	3.90	34.68%
09/23/03	66	Rain	123	YM-2	Tripper	9.8	47	4.80	127	YM-1	Tripper	37.9	163	4.30	11.51%
09/24/03	65	Clear	820	E-1	Tripper	28.2	124	4.40	824	E-2	Tripper	37.2	134	3.60	22.07%
09/25/03	70	Ptly. Cloudy	10	F2-4	Tripper	40.2	157	3.91	14	F2-1	Tripper	23.7	111	4.68	-16.61%
09/26/03	71	Cloudy	175	531 U/BDL	Tripper	28	131	4.68	29	BX506 N/L	Tripper	21.9	102	4.66	0.45%
09/27/03	67	Ptly. Cloudy	123	YM-2	Tripper	34.7	173	4.99	Hold						
09/28/03	70	Rain	824	E-2	Tripper	8.2	34	4.15	Hold						
09/29/03	64	Ptly. Cloudy	22	X-2	Tripper	41.2	207	5.02	36	BX 535 X/C	Tripper	41.4	184	4.44	13.05%
09/30/03	69	Clear	23	Q-1	Tripper	26.9	120	4.46	201	Q-2	Tripper	15.7	74	4.71	-5.36%
Totals						948.6	4,375	4.61				861.3	3,681	4.27	7.92%

CTTRANSIT AUGUST, 2003 HYBRID BUS TEST PROGRAM DATA

Total Fleet	Fleet Total	Fleet Avg
Miles	995,220.00	2,519.5
Fuel - Gallons	305,170.00	772.6
Oil - Quarts	2,768.00	7.0
Road Calls	330	0.8
Maintenance Parts Cost	\$214,699.95	\$546.31
Maintenance Labor Cost	\$126,381.33	\$321.58
Total Maintenance Cost	\$341,081.28	\$867.89
Total Cost/Mile	\$0.34	\$0.34
Miles/Gallon Fuel	3.3	3.3
Miles/Quart Oil	359.5	359.5
Miles/Road Call	3,015.8	3,015.8



Base Comparison Buses	201	202	201 & 202	Base Avg	Hybrid vs Base
Miles	4,450	5,065	9,515	4,758	-324.5
Fuel - Gallons	1,127.0	1,302.7	2,429.7	1,214.9	-177.35
Oil - Quarts	6.0	4.0	10.0	5.0	-2.4
Road Calls	1	0	1	0.5	-0.5
Maintenance Parts Cost	\$589.20	\$131.48	\$720.68	\$360.34	-\$210.11
Maintenance Labor Cost	\$249.06	\$64.52	\$313.58	\$156.79	-\$49.23
Total Maintenance Cost	\$838.26	\$196.00	\$1,034.26	\$517.13	-\$259.34
Total Cost/Mile	\$0.19	\$0.04	\$0.11	\$0.11	-\$0.05
Miles/Gallon Fuel	3.95	3.89	3.92	3.92	9.11%
Miles/Quart Oil	741.67	1266.25	951.50	951.50	75.8%
Miles/Road Call	4450.00	N/A	9515.00	9515.00	N/A

Hybrid Buses	H301	H302	H301 & H302	Hybrid Avg	Hybrid vs Fleet
Miles	4,490	4,376	8,866	4,433	1,913
Fuel - Gallons	1045	1030	2075	1037.5	264.9
Oil - Quarts	2.3	3.0	5.3	2.7	-4.4
Road Calls - Hybrid Related	0	0	0	0	-0.8
Road Calls	0	0	0	0	-0.8
Maintenance Parts Cost	\$226.21	\$74.25	\$300.46	\$150.23	-\$396.08
Maintenance Labor Cost	\$102.04	\$113.08	\$215.12	\$107.56	-\$214.02
Total Maintenance Cost	\$328.25	\$187.33	\$515.58	\$257.79	-\$610.10
Total Cost/Mile	\$0.07	\$0.04	\$0.06	\$0.06	-\$0.29
Miles/Gallon Fuel	4.30	4.25	4.27	4.27	31.02%
Miles/Quart Oil	1952.17	1458.67	1672.83	1672.83	78.51%
Miles/Road Call - Hybrid Related	0	0	0	N/A	N/A
Miles/ Road Call Total	0	0	0	N/A	N/A

CTTRANSIT
H301 and 201 BUS TEST DATA
AUGUST, 2003

			H301					201							
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG CHANGE
DATE	TEMP.	CONDITIONS													
08/01/03	75	Cloudy	125	N-1	1765	26.2	124	4.73	19	N-2	1645	40.2	184	4.58	3.40%
08/02/03	84	Humid	Hold						Tripper			57.7	272	4.71	
08/03/03	75	Humid	819	KT-2	1729	35.5	129	3.63	806	KT-3	1658	36.6	121	3.31	9.92%
08/04/03	82	Rain	7	L-1	1138	53.1	251	4.73	11	L-2	1165	61.3	262	4.27	10.60%
08/05/03	81	Showers	Tripper			32.9	154	4.68	Tripper			43	140	3.26	43.77%
08/06/03	82	Humid	24	Q-4	1621	32.6	101	3.10	110	Q-3	1569	40.9	126	3.08	0.57%
08/07/03	79	Ptly Cloudy/Humid	Tripper			28.6	121	4.23	Tripper			31.9	128	4.01	5.44%
08/08/03	79	Cloudy/Humid	Tripper			2.1	31	14.76	Tripper			32.8	159	4.85	204.52%
08/09/03	69	Cloudy/Humid	118	X-1	1439	59.8	250	4.18	119	X-2	1316	4.6	18	3.91	6.84%
08/10/03	80	Cloudy/Humid	806	KT-3	1658	30.3	103	3.40	819	KT-2	1631	41.7	135	3.24	5.00%
08/11/03	79	Ptly Cloudy/Humid	115	U-2	1670	29.8	138	4.63	28	U-1	822	43.8	164	3.74	23.68%
08/12/03	81	Ptly Cloudy/Humid	30	T-4	1039	33.8	134	3.96	12	T-2	994	43.3	134	3.09	28.11%
08/13/03	83	Ptly Cloudy/Humid	Tripper			21.6	87	4.03	Tripper			34.2	144	4.21	-4.34%
08/14/03	82	Clear	11	L-2	1165	61.1	251	4.11	7	L-1	1681	66.4	260	3.92	4.91%
08/15/03	89	Ptly Cloudy/Humid	110	Q-3	1569	45.3	160	3.53	24	Q-4	1635	38.9	127	3.26	8.19%
08/16/03	82	Ptly Cloudy/Humid	Hold						Hold						
08/17/03	76	Cloudy	Tripper			57.6	196	3.40	Hold						
08/18/03	79	Ptly Cloudy	Tripper			30.4	207	6.81	Tripper			24.8	95	3.83	77.76%
08/19/03	85	Clear	Tripper			35	147	4.20	Hold			8.4	22	2.62	60.36%
08/20/03	85	Clear	Tripper			34.2	167	4.88	Tripper			30.2	146	4.83	1.01%
08/21/03	84	Clear/Humid	Tripper			56.3	258	4.58	Tripper			61.3	193	3.15	45.55%
08/22/03	93	Hazy/Humid	Tripper			26.4	100	3.79	Tripper			23.1	85	3.68	2.94%
08/23/03	80	Clear	119	X-2	1691	54.2	262	4.83	118	X-1	1439	57.9	250	4.32	11.95%
08/24/03	73	Clear	819	KT-2	1631	29.2	129	4.42	806	KT-3	1658	32	121	3.78	16.83%
08/25/03	79	Clear	Tripper			54.4	240	4.41	Tripper			28.4	136	4.79	-7.87%
08/26/03	80	Clear	19	N-2	1306	39.1	177	4.53	125	N-1	1427	82	345	4.21	7.59%
08/27/03	83	Clear	Tripper			54.8	181	3.30	Tripper			29.5	118	4.00	-17.43%
08/28/03	74	Clear	12	T-2	1399	48.8	249	5.10	15	T-3	1080	42.8	141	3.29	54.88%
08/29/03	86	Ptly Cloudy	24	Q-4	1621	31.9	143	4.48	110	Q-3	1569	34.4	163	4.74	-5.39%
08/30/03	83	Ptly Cloudy	Hold						Tripper			55.3	261	4.72	
08/31/03	67	Clear	Hold						Hold						
Totals						1,045	4,490	4.30				1,127	4,450	3.95	8.85%

CTTRANSIT
H302 and 202 BUS TEST DATA
AUGUST, 2003

			H302					202							
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG CHANGE
DATE	TEMP.	CONDITIONS													
08/01/03	75	Cloudy	14	F2-1	1035	24.7	100	4.05	10	F2-4	1135	39.2	154	3.93	3.05%
08/02/03	84	Humid	Tripper			35.9	136	3.79	Tripper			45.1	183	4.06	-6.64%
08/03/03	75	Humid	820	E-1	1749	32	140	4.38	824	E-2	1762	45.7	146	3.19	36.94%
08/04/03	82	Rain	Tripper			29.8	120	4.03	Tripper			51	167	3.27	22.98%
08/05/03	81	Showers	142	K-2		22.3	78	3.50	204	K-1		58.6	275	4.69	-25.47%
08/06/03	82	Humid	22	X-2	1089	52.7	266	5.05	36	BX 535 X/C	1693	67.4	317	4.70	7.32%
08/07/03	79	Ptly Cloudy/Humid	Tripper			19.7	76	3.86	Tripper			36.7	151	4.11	-6.24%
08/08/03	79	Cloudy/Humid	175	531 U/BDI	1770	33.8	166	4.91	29	BX506 N/L	1083	46.1	166	3.60	36.39%
08/09/03	69	Cloudy/Humid	127	YM-1	1687	44	194	4.41	123	YM-2	1437	41.2	178	4.32	2.05%
08/10/03	80	Cloudy/Humid	824	E-2	1762	39.4	139	3.53	820	E-1	1749	39.4	147	3.73	-5.44%
08/11/03	79	Ptly Cloudy/Humid	208	F1-1	1456	35.2	150	4.26	13	F1-2	1130	51.4	160	3.11	36.90%
08/12/03	81	Ptly Cloudy/Humid	23	Q-1	1349	36.5	167	4.58	201	Q-2	1434	63.9	216	3.38	35.35%
08/13/03	83	Ptly Cloudy/Humid	Tripper			27	98	3.63	Tripper			36.8	161	4.38	-17.04%
08/14/03	82	Clear	14	F2-1	1035	47.3	174	3.68	10	F2-4	1135	43	151	3.51	4.76%
08/15/03	89	Ptly Cloudy/Humid	Tripper			14.7	50	3.40	Tripper			40.1	136	3.39	0.29%
08/16/03	82	Ptly Cloudy/Humid	Tripper			40.1	171	4.26	Hold						
08/17/03	76	Cloudy	Tripper			32.9	140	4.26	Hold						
08/18/03	79	Ptly Cloudy	22	X-2	1089	54.5	267	4.90	36	BX 535 X/C	1693	68.4	318	4.65	5.38%
08/19/03	85	Clear	Tripper			37.4	147	3.93	Tripper			35.6	148	4.16	-5.46%
08/20/03	85	Clear	Tripper			55	225	4.09	Tripper			30.8	114	3.70	10.53%
08/21/03	84	Clear/Humid	201	Q-2	1434	34.1	169	4.96	23	Q-1	1399	42.3	146	3.45	43.59%
08/22/03	93	Hazy/Humid	13	F1-2	1130	45.4	155	3.41	208	F1-1	1456	60.7	182	3.00	13.87%
08/23/03	80	Clear	123	YM-2	1437	39.5	172	4.35	127	YM-1	1288	43.5	201	4.62	-5.76%
08/24/03	73	Clear	820	E-1	1749	17	72	4.24	824	E-2	1762	40.3	141	3.50	21.05%
08/25/03	79	Clear	10	F2-4	1135	30.8	146	4.74	14	F2-1	1035	51.6	183	3.55	33.66%
08/26/03	80	Clear	175	531 U/BDI	1769	39.4	166	4.21	29	BX506 N/L	982	41.2	180	4.37	-3.56%
08/27/03	83	Clear	204	K-1	1243	29.5	111	3.76	142	K-2	1693	35.3	104	2.95	27.72%
08/28/03	74	Clear	Tripper			52.1	270	5.18	Tripper			24.7	114	4.62	12.28%
08/29/03	86	Ptly Cloudy	Hold						Tripper			46.7	200	4.28	
08/30/03	83	Ptly Cloudy	Tripper			26.8	111	4.14	Tripper			41.7	180	4.32	-4.05%
08/31/03	67	Clear	Hold						Tripper			34.3	146	4.26	
Totals						1,029.5	4,376	4.25				1,302.7	5,065	3.89	9.32%

CTTRANSIT JULY, 2003 HYBRID BUS TEST PROGRAM DATA

Total Fleet	Fleet Total	Fleet Avg
Miles	975,288.00	2,513.6
Fuel - Gallons	305,519.00	787.4
Oil - Quarts	2,829.00	7.3
Road Calls	330	0.9
Maintenance Parts Cost	\$270,505.41	\$700.79
Maintenance Labor Cost	\$144,076.35	\$373.25
Total Maintenance Cost	\$414,581.76	\$1,074.05
Total Cost/Mile	\$0.43	\$0.43
Miles/Gallon Fuel	3.2	3.2
Miles/Quart Oil	344.7	344.7
Miles/Road Call	2,955.4	2,955.4



Base Comparison Buses	201	202	201 & 202	Base Avg	Hybrid vs Base
Miles	5,359	3,953	9,312	4,656	-528
Fuel - Gallons	1,346.5	1,062.8	2,409.3	1,204.7	-216.3
Oil - Quarts	0.0	10.9	10.9	5.5	-5.5
Road Calls	1	0	1	0.5	-0.5
Maintenance Parts Cost	\$73.00	\$410.69	\$483.69	\$241.85	\$686.39
Maintenance Labor Cost	\$142.22	\$555.14	\$697.36	\$348.68	-\$116.10
Total Maintenance Cost	\$215.22	\$965.83	\$1,181.05	\$590.53	\$570.29
Total Cost/Mile	\$0.04	\$0.24	\$0.13	\$0.13	\$0.15
Miles/Gallon Fuel	3.98	3.72	3.87	3.87	8.06%
Miles/Quart Oil	N/A	362.66	354.31	854.31	N/A
Miles/Road Call	5359.00	N/A	9312.00	9312.00	N/A

Hybrid Buses	H301	H302	H301 & H302	Hybrid Avg	Hybrid vs Fleet
Miles	4,385	3,871	8,256	4,128	1,614
Fuel - Gallons	1038.2	938.5	1976.7	988.35	200.9
Oil - Quarts	0.0	0.0	0.0	0.0	-7.3
Road Calls - Hybrid Related	0	0	0	0	-0.9
Road Calls	0	0	0	0	-0.9
		0.0			
Maintenance Parts Cost	\$1,856.46	\$0.00	\$1,856.46	\$928.23	\$227.44
Maintenance Labor Cost	\$381.74	\$83.42	\$465.16	\$232.58	-\$140.67
Total Maintenance Cost	\$2,238.20	\$83.42	\$2,321.62	\$1,160.81	\$86.76
Total Cost/Mile	\$0.51	\$0.02	\$0.28	\$0.28	-\$0.15
Miles/Gallon Fuel	4.22	4.12	4.18	4.18	30.84%
Miles/Quart Oil	N/A	N/A	N/A	N/A	N/A
Miles/Road Call - Hybrid Related	0	0	0	N/A	N/A
Miles/ Road Call Total	0	0	0	N/A	N/A

CTTRANSIT
H301 and 201 BUS TEST DATA
JULY, 2003

			H301					201							
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG
DATE	TEMP.	CONDITIONS												CHANGE	
07/01/03	80	Clear	203	U-3	1598	44.7	192	4.30	28	U-1	1339	43.2	169	3.91	9.80%
07/02/03	82	Clear	7	L-1	1083	57.2	252	4.41	11	L-2	1165	62.5	258	4.13	6.72%
07/03/03	78	Hazy	18	YM-2	1405	47.1	227	4.82	Trippered			43.7	181	4.14	16.36%
07/04/03	83	Clear	404	E-2	1497	38.1	136	3.57	420	E-1	1429	39.9	148	3.71	-3.77%
07/05/03	85	Clear	118	X-1	1550	59.6	250	4.19	119	X-2	1316	55.8	233	4.18	0.46%
07/06/03	89	Clear	806	KT-3	1658	2.6	10	3.85	819	KT-2	1631	45	135	3.00	28.21%
07/07/03	84	Hazy	Trippered	E-4	1392	24.9	97	3.90	141	E-1	1746	49.3	165	3.35	16.40%
07/08/03	87	Hazy	Trippered	Bx-166	1682	20.3	80	3.94	12	T-2	994	40.5	135	3.33	18.23%
07/09/03	72	Cloudy	19	N-2	1645	36.8	176	4.78	125	N-1	1765	40.4	150	3.71	28.81%
07/10/03	75	Cloudy	28	U-1	822	38.9	163	4.19	115	U-2	1540	43.3	162	3.74	12.00%
07/11/03	73	Ptly Cloudy	Trippered			19.1	86	4.50	7	L-1	1681	56	264	4.71	-4.49%
07/12/03	76	Clear	119	X-2	1316	51.9	261	5.03	118	X-1	1439	57	260	4.56	10.25%
07/13/03	82	Clear	819	KT-2	1767	35	130	3.71	806	KT-3	1658	34.1	122	3.58	3.82%
07/14/03	71	Cloudy	203	U-3	1598	32.5	141	4.34	Trippered			35.9	156	4.35	-0.16%
07/15/03	76	Clear	Hold			24.1	100	4.15	Trippered			32.7	146	4.46	-7.07%
07/16/03	74	Cloudy	12	T-2	1373	33.5	132	3.94	30	T-4	1435	42.3	140	3.31	19.05%
07/17/03	78	Ptly Cloudy	110	Q-3	1569	32.4	121	3.73	24	Q-4	1621	43	127	2.95	26.45%
07/18/03	79	Ptly Cloudy	Trippered			22.5	99	4.40	Hold			10.8	37	3.43	28.43%
07/19/03	76	Clear	118	X-1	1439	49.3	250	5.07	119	X-2	1316	57.1	273	4.78	6.06%
07/20/03	78	Clear	819	KT-2	1594	36	119	3.31	806	KT-3	1658	35	120	3.43	-3.59%
07/21/03	75	Cloudy	Trippered			25.1	112	4.46				47.5	203	4.27	4.41%
07/22/03	80	Hazy/Humid	Hold									59.8	257	4.30	#VALUE!
07/23/03	72	Rain	Hold			26.7	102	3.82				61	277	4.54	-15.87%
07/24/03	78	Ptly Cloudy				27.4	121	4.42	Hold			15.9	57	3.58	23.18%
07/25/03	87	Ptly Cloudy				27.1	95	3.51	Trippered			26.4	90	3.41	2.83%
07/26/03	85	Clear	119	X-2	1316	57.5	262	4.56	118	X-1	1744	59.6	252	4.23	7.77%
07/27/03	84	Cloudy	806	KT-3	1658	29.5	116	3.93	819	KT-2	1526	41.5	135	3.25	20.88%
07/28/03	82	Clear	Trippered			35.2	143	4.06				68	305	4.49	-9.43%
07/29/03	77	Clear				40.6	164	4.04	Hold			17.5	71	4.06	-0.44%
07/30/03	77	Clear				22.1	87	3.94	Hold			33.1	130	3.93	0.23%
07/31/03	76	Ptly Cloudy	28	U-2		<u>40.5</u>	<u>161</u>	<u>3.98</u>	203	U-3		<u>48.7</u>	<u>201</u>	<u>4.13</u>	<u>-3.68%</u>
Totals						1,038.2	4,385	4.22				1,346.5	5,359	3.98	6.12%

CTTRANSIT
H302 and 202 BUS TEST DATA
JULY, 2003

			H302				202								
NOON			RUN NO.	BLOCK #	BADGE #	FUEL	MILES	MPG	RUN NO.	BLOCK#	BADGE #	FUEL	MILES	MPG	% MPG
DATE	TEMP.	CONDITIONS													CHANGE
07/01/03	80	Clear	Trippered			23.9	100	4.18	204	K-1	1515	18.6	90	4.84	-13.53%
07/02/03	82	Clear	Hold			11.4	41	3.60	110	Q-3	1691	37.7	124	3.29	9.34%
07/03/03	78	Hazy	189	F2-2	1329	22.3	107	4.80	14	F2-1	1035	53.9	184	3.41	40.56%
07/04/03	83	Clear	406	X-1	1337	41.7	186	4.46	422	X-2	1349	44.7	199	4.45	0.19%
07/05/03	85	Clear	123	YM-2	1695	40.9	172	4.21	127	YM-1	1288	46.7	204	4.37	-3.73%
07/06/03	89	Clear	824	E-2	1762	39.5	135	3.42	820	E-1	1749	27.4	87	3.18	7.64%
07/07/03	84	Hazy	13	F1-2	1687	9.9	42	4.24	208	F1-1	1456	62.2	236	3.79	11.81%
07/08/03	87	Hazy	204	K-1	1515	76.3	244	3.20	142	K-2	1550	37.7	105	2.79	14.82%
07/09/03	72	Cloudy	189	F2-2	1329	23.7	106	4.47	Trippered			19.9	84	4.22	5.96%
07/10/03	75	Cloudy	208	F1-1	1456	48.2	174	3.61	13	F1-2	1687	52.7	162	3.07	17.44%
07/11/03	73	Ptly Cloudy	22	X-2	1089	47.9	264	5.51	36	BX 535 X/O	881	63.6	318	5.00	10.23%
07/12/03	76	Clear	127	YM-1	1288	41	198	4.83	123	YM-2	1437	43.2	180	4.17	15.90%
07/13/03	82	Clear	820	E-1	1749	34	139	4.09	824	E-2	1762	44.4	141	3.18	28.74%
07/14/03	71	Cloudy	14	F2-1	1035	44.5	178	4.00	Hold			0	0	N/A	N/A
07/15/03	76	Clear	Hold			22.9	105	4.59	Hold			0	0	N/A	N/A
07/16/03	74	Cloudy	23	Q-1	1349	37.4	141	3.77	O.O.S.			0	0	N/A	N/A
07/17/03	78	Ptly Cloudy	221	Bx 142 C14	1509	29.3	141	4.81	Trippered			19.7	85	4.31	11.53%
07/18/03	79	Ptly Cloudy	Trippered			20.6	101	4.90	Trippered			15.7	26	1.66	196.06%
07/19/03	76	Clear	133	E-1	1230	31	122	3.94	109	E-3	1334	47.6	221	4.64	-15.24%
07/20/03	78	Clear	820	E-1	1749	36.1	139	3.85	824	E-2	1762	45.3	143	3.16	21.97%
07/21/03	75	Cloudy	14	F2-1	1035	45.7	180	3.94	10	F2-4	1635	23.5	110	4.68	-15.85%
07/22/03	80	Hazy/Humid	36	Bx 535 X/O	1693	59.3	306	5.16	22	X-2	1089	42.1	176	4.18	23.43%
07/23/03	72	Rain	142	K-2	1694	34.5	120	3.48	204	K-1	1515	37	118	3.19	9.06%
07/24/03	78	Ptly Cloudy	Trippered			22.9	89	3.89	Trippered			18.2	56	3.08	26.31%
07/25/03	87	Ptly Cloudy	29	BX506 N/U	982	41.3	160	3.87	175	BX 531 U/BDL/N1770		47	160	3.40	13.80%
07/26/03	85	Clear	133	E-1	1230	34.7	121	3.49	109	E-3	1334	48.3	164	3.40	2.70%
07/27/03	84	Cloudy	820	E-1	1749	17.6	60	3.41	824	E-2	1762	31.2	106	3.40	0.34%
07/28/03	82	Clear	Hold					N/A	Trippered			68.5	218	3.18	N/A
07/29/03	77	Clear	Hold					N/A	Trippered			2.1	102	4.62	N/A
07/30/03	77	Clear	Hold					N/A	Trippered			6.1	19	3.11	N/A
07/31/03	76	Ptly Cloudy	Hold					N/A	Trippered			37.8	135	3.57	N/A
Totals						938.5	3,871	4.12				1,062.8	3,953	3.72	10.90%



**FLEET MILES & MILES PER GALLON
SEPTEMBER, 2003**

HARTFORD DIVISION

Make & Series	No.	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NFI S-40 201-240	40	168,989	39,346	4.29	78,796	18,229	4.32	90,193	21,117	-0.03
NOVA 1121 9637-9649	10	31,809	8,226	3.87	37,341	9,344	4.00	-5,532	-1,118	-0.13
MCI 911-915 & 9001-9200	77	135,985	41,812	3.25	192,253	56,591	3.40	-56,268	-14,779	-0.14
NFI 6V92 9301-9338	38	84,944	28,138	3.02	108,459	32,788	3.31	-23,515	-4,650	-0.29
NFI S-50 9339-9340 & 9401-9428	30	76,705	19,473	3.94	93,177	21,526	4.33	-16,472	-2,053	-0.39
NFI S-50 941-965	25	51,192	9,892	5.18	60,557	10,901	5.56	-9,365	-1,009	-0.38
NFI Hybrid H301 & H302	2	8,058	1,694	4.76	N/A	N/A	N/A	N/A	N/A	N/A
MCI Commuter 303-309	7	17,760	3,940	4.51	N/A	N/A	N/A	N/A	N/A	N/A
Hartford Totals	229	575,442	152,521	3.77	570,583	149,379	3.82	-20,959	-2,492	-0.05

NEW HAVEN DIVISION

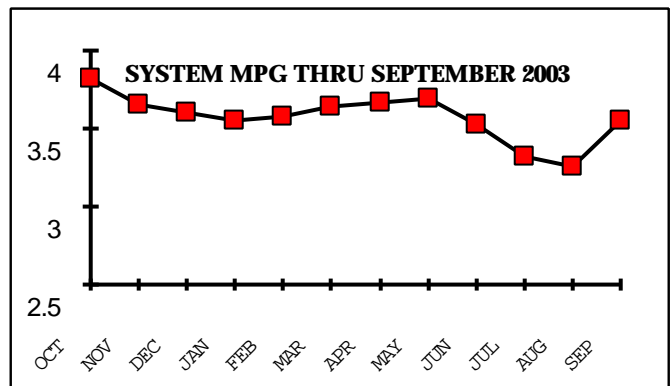
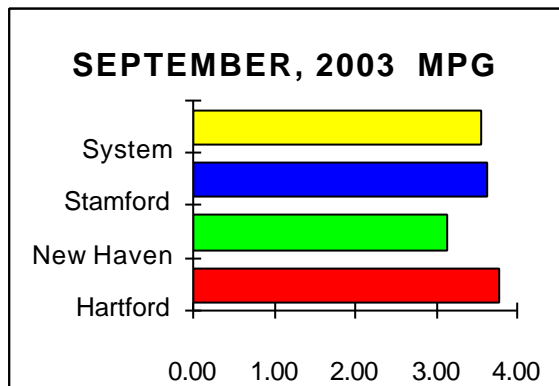
Make	No.	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NOVA 1121 9601-9623	23	66,293	19,547	3.39	67,982	20,287	3.35	-1,689	-740	0.04
ElDorado 9901-9903	3	1,520	679	2.24	2,814	1,165	2.42	-1,294	-486	-0.18
MCI 9101 - 9186	84	205,730	66,905	3.07	207,047	68,544	3.02	-1,317	-1,639	0.05
New Haven Totals	110	273,543	87,131	3.14	277,843	89,996	3.09	-4,300	-2,865	0.05

STAMFORD DIVISION

Make	No.	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NOVA 1121 9626-9636	14	33,640	9,551	3.52	30,049	9,226	3.26	3,591	325	0.27
ElDorado 9904-9913	10	7,537	2,237	3.37	7,541	2,379	3.17	-4	-142	0.20
NFI S-40 101-126	26	66,912	19,263	3.47	67,273	19,160	3.51	-361	103	-0.04
NFI S-40 127-132	6	23,317	5,129	4.55	20,432	4,611	4.43	2,885	518	0.11
Stamford Totals	56	131,406	36,180	3.63	125,295	35,376	3.54	3,591	325	0.09

SYSTEM

Make	No.	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
All buses	395	980,391	275,832	3.55	973,721	274,751	3.54	6,670	1,081	0.01





**FLEET MILES & MILES PER GALLON
AUGUST, 2003**

HARTFORD DIVISION

Make & Series	No.	Current Month			Prior Year Month			Difference		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NFI S-40 201-240	40	181,630	47,099	3.86	62,783	15,172	4.14	118,847	31,927	-0.28
NOVA 1121 9637-9649	10	31,261	8,799	3.55	45,023	12,284	3.67	-13,762	-3,485	-0.11
MCI 911-915 & 9001-9200	77	131,949	43,452	3.04	218,913	67,804	3.23	-86,964	-24,352	-0.19
NFI 6V92 9301-9338	38	89,820	31,590	2.84	127,898	41,410	3.09	-38,078	-9,820	-0.25
NFI S-50 9339-9340 & 9401-9428	30	73,488	19,648	3.74	108,323	27,003	4.01	-34,835	-7,355	-0.27
NFI S-50 941-965	25	50,379	10,380	4.85	68,701	13,029	5.27	-18,322	-2,649	-0.42
NFI Hybrid H301 & H302	2	8,737	2,015	4.34	N/A	N/A	N/A	N/A	N/A	N/A
MCI Commuter 303-309	7	12,971	3,161	4.10	N/A	N/A	N/A	N/A	N/A	N/A
Hartford Totals	229	580,235	166,144	3.49	631,641	176,702	3.57	-73,114	-15,734	-0.08

NEW HAVEN DIVISION

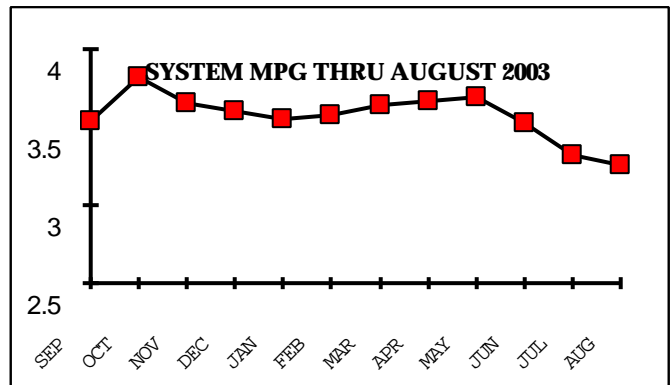
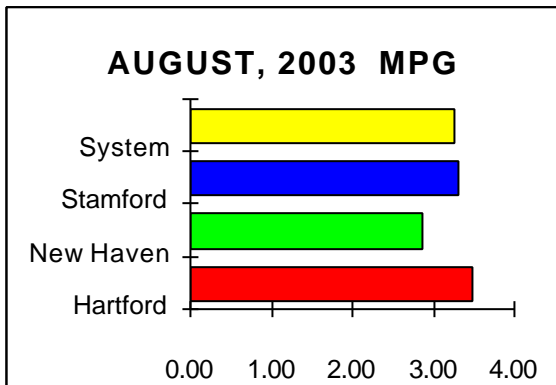
Make	No.	Current Month			Prior Year Month			Difference		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NOVA 1121 9601-9623	23	77,493	24,712	3.14	72,861	22,853	3.19	4,632	1,859	-0.05
ElDorado 9901-9903	3	1,209	513	2.36	3,042	1,292	2.35	-1,833	-779	0.00
MCI 9101 - 9186	84	204,101	73,711	2.77	222,256	77,486	2.87	-18,155	-3,775	-0.10
New Haven Totals	110	282,803	98,936	2.86	298,159	101,631	2.93	-15,356	-2,695	-0.08

STAMFORD DIVISION

Make	No.	Current Month			Prior Year Month			Difference		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
NOVA 1121 9626-9636	14	35,347	11,849	2.98	31,909	9,984	3.20	3,438	1,865	-0.21
ElDorado 9904-9913	10	7,963	2,510	3.17	7,285	2,682	2.72	678	-172	0.46
NFI S-40 101-126	26	66,678	20,536	3.25	76,347	22,840	3.34	-9,669	-2,304	-0.10
NFI S-40 127-132	6	22,194	5,195	4.27	20,416	4,866	4.20	1,778	329	0.08
Stamford Totals	56	132,182	40,090	3.30	135,957	40,372	3.37	3,438	1,865	-0.07

SYSTEM

Make	No.	Current Month			Prior Year Month			Difference		
		Miles	Gallons	MPG	Miles	Gallons	MPG	Miles	Gallons	MPG
All buses	395	995,220	305,170	3.26	1,065,757	318,705	3.34	-70,537	-13,535	-0.08





**FLEET MILES & MILES PER GALLON
JULY, 2003**

HARTFORD DIVISION

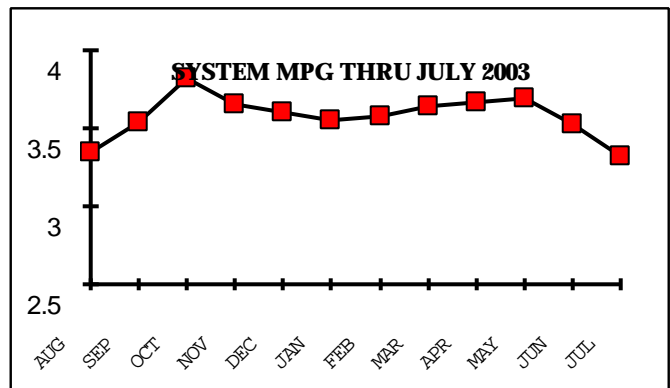
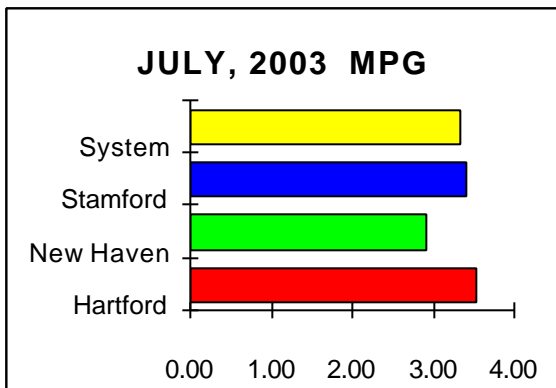
<u>Make & Series</u>	<u>No.</u>	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>
NFI S-40 201-240	40	183,234	46,921	3.91	N/A	N/A	N/A	N/A	N/A	N/A
NOVA 1121 9637-9649	13	40,093	11,397	3.52	48,889	13,208	3.70	-8,796	-1,811	-0.18
MCI 911-915 & 9001-9200	77	139,994	44,939	3.12	249,774	77,465	3.22	-109,780	-32,526	-0.11
NFI 6V92 9301-9338	38	86,821	30,293	2.87	132,817	43,007	3.09	-45,996	-12,714	-0.22
NFI S-50 9339-9340 & 9401-9428	30	86,482	23,086	3.75	115,794	28,872	4.01	-29,312	-5,786	-0.26
NFI S-50 941-965	25	56,185	11,266	4.99	70,124	13,565	5.17	-13,939	-2,299	-0.18
<u>NFI Hybrid H301 & H302</u>	<u>2</u>	<u>8,329</u>	<u>2,001</u>	<u>4.16</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<i>Hartford Totals</i>	225	601,138	169,903	3.54	617,398	176,117	3.51	-207,823	-55,136	0.03

NEW HAVEN DIVISION

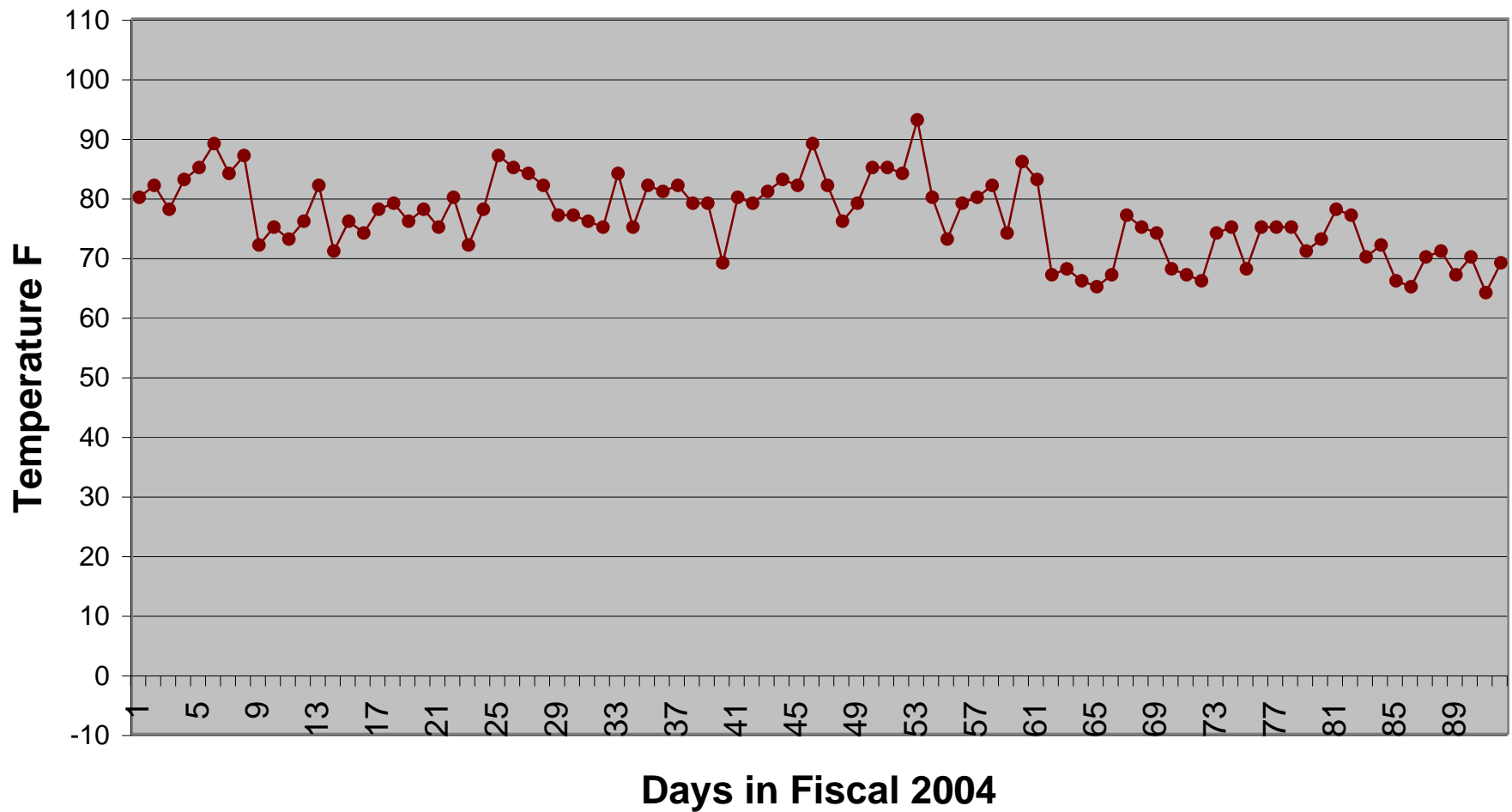
<u>Make</u>	<u>No.</u>	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>
NOVA 1121 9601-9623	23	72,058	23,102	3.12	76,701	24,325	3.15	-4,643	-1,223	-0.03
ElDorado 9901-9903	3	1,669	668	2.50	3,101	1,430	2.17	-1,432	-762	0.33
<u>MCI 9101 - 9186</u>	<u>84</u>	<u>209,897</u>	<u>73,695</u>	<u>2.85</u>	<u>215,365</u>	<u>76,759</u>	<u>2.81</u>	<u>-5,468</u>	<u>-3,064</u>	<u>0.04</u>
<i>New Haven Totals</i>	110	283,624	97,465	2.91	295,167	102,514	2.88	-11,543	-5,049	0.03

STAMFORD DIVISION

<u>Make</u>	<u>No.</u>	<u>Current Month</u>			<u>Prior Year Month</u>			<u>Difference</u>		
		<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>	<u>Miles</u>	<u>Gallons</u>	<u>MPG</u>
NOVA 1121 9626-9636	11	25,736	8,231	3.13	26,929	8,700	3.10	-1,193	-469	0.03
ElDorado 9904-9913	10	7,415	2,367	3.13	8,162	2,721	3.00	-747	-354	0.13
NFI S-40 101-126	26	71,979	21,603	3.33	77,982	24,116	3.23	-6,003	-2,513	0.10
<u>NFI S-40 127-132</u>	<u>6</u>	<u>24,839</u>	<u>5,950</u>	<u>4.17</u>	<u>20,261</u>	<u>4,874</u>	<u>4.16</u>	<u>4,578</u>	<u>1,076</u>	<u>0.02</u>
<i>Stamford Totals</i>	53	129,969	38,151	3.41	133,334	40,411	3.30	-1,193	-469	0.11



HYBRID BUS DAILY NOON IN-SERVICE FIELD TEMPERATURE



WO	Asset Task Part Number	Asset Description Task Description/Work Done	Opened	Closed	Hours	Labor Cost	Parts Cost	Equip Cost	Vend Cost
Asset	301	New Flyer Hybrid Bus							
0389293	1 301	New Flyer Hybrid Bus Perform the E Check in accordance with Task Card service bus	09/30/03	09/30/03	0.25	5.23	0.00	0.00	0.00
0387545	1 301	New Flyer Hybrid Bus Perform the E Check in accordance with Task Card service .bus	09/09/03	09/09/03	0.50	10.46	0.00	0.00	0.00
0385807	1 301	New Flyer Hybrid Bus E insp E insp	08/19/03	08/19/03	0.67	14.04	0.00	0.00	0.00
0384373	1 301	New Flyer Hybrid Bus insp service bus	08/01/03	08/01/03	0.25	5.23	0.00	0.00	0.00
0383691	1 301	New Flyer Hybrid Bus int. lamp out replace ballast	07/25/03	07/25/03	1.02	21.69	74.44	0.00	0.00
0382676	1 301	New Flyer Hybrid Bus left rear damage replace corner	07/15/03	07/22/03	1.00	20.72	126.45	0.00	0.00
0382467	1 301	New Flyer Hybrid Bus insp service bus	07/11/03	07/11/03	0.25	5.22	0.00	0.00	0.00
0381997	1 301	New Flyer Hybrid Bus Drivers window broken Replaced drivers window	07/07/03	07/07/03	1.50	31.38	45.32	0.00	0.00
0386167	1 301	New Flyer Hybrid Bus int. lt. out replace bulb/balast	08/22/03	08/22/03	0.50	9.97	195.76	0.00	0.00
0385356	1 301	New Flyer Hybrid Bus int. lt. out	08/13/03	08/13/03	0.50	9.97	9.15	0.00	0.00

WO	Asset Task Part Number	Asset Description Task Description/Work Done	Opened	Closed	Hours	Labor Cost	Parts Cost	Equip Cost	Vend Cost
		replace bulb							
0385931	1 301	New Flyer Hybrid Bus door handle very tight	08/20/03	08/20/03	0.50	10.38	0.00	0.00	0.00
		freed up							
0382918	1 301	New Flyer Hybrid Bus radio doorloose	07/17/03	07/17/03	0.67	13.88	0.00	0.00	0.00
		repaired							
0382681	1 301	New Flyer Hybrid Bus window	07/15/03	07/15/03	0.50	10.09	168.40	0.00	0.00
		replace							
0382408	1 301	New Flyer Hybrid Bus rear seat cut drivers side window needs to be fixied	07/11/03	07/11/03	2.00	41.44	0.00	0.00	0.00
		repaired							
0381920	1 301	New Flyer Hybrid Bus chock block holder	07/07/03	07/07/03	1.00	20.18	0.00	0.00	0.00
		reinstall							
0383841	1 301	New Flyer Hybrid Bus jammed fare box	07/28/03	07/28/03	0.50	10.93	3.05	0.00	0.00
		replace cassett							
0385728	1 301	New Flyer Hybrid Bus Repaired fare box	08/18/03	08/18/03	0.50	10.93	21.30	0.00	0.00
		Replaced trim unit							
0383425	1 301	New Flyer Hybrid Bus sign operation	07/23/03	07/23/03	3.75	79.73	1403.89	0.00	0.00
		repair sign operation							
0388568	1 301	New Flyer Hybrid Bus Perform the A Check in accordance with Task Card	09/22/03	09/23/03	2.00	42.60	0.00	0.00	0.00
		Perform the A Check in accordance with Task Card							
0386925	1 301	New Flyer Hybrid Bus B-Inspection	09/02/03	09/03/03	4.00	85.20	53.50	0.00	0.00

WO	Asset Task Part Number	Asset Description Task Description/Work Done	Opened	Closed	Hours	Labor Cost	Parts Cost	Equip Cost	Vend Cost
		B-Inspection							
0384733	1 301	New Flyer Hybrid Bus A-Inspection	08/06/03	08/07/03	2.00	41.52	0.00	0.00	0.00
		A-Inspection							
0383127	1 301	New Flyer Hybrid Bus b-insp	07/19/03	07/21/03	4.00	85.04	34.91	0.00	0.00
		b-insp							
0381938	1 301	New Flyer Hybrid Bus A-Inspection	07/07/03	07/08/03	2.00	41.44	0.00	0.00	0.00
		A-Inspection							
Asset	301	New Flyer Hybrid Bus	Subtotal -->		29.86	627.27	2136.17	0.00	0.00

WO	Asset Task Part Number	Asset Description Task Description/Work Done	Opened	Closed	Hours	Labor Cost	Parts Cost	Equip Cost	Vend Cost
Asset	302	New Flyer Hybrid Bus							
0389298	1 302	New Flyer Hybrid Bus Perform the E Check in accordance with Task Card service .bus	09/30/03	09/30/03	0.50	10.46	0.00	0.00	0.00
0388616	1 302	New Flyer Hybrid Bus curbside mirror not adjusting replace mirror assy.	09/23/03	09/23/03	0.25	5.38	392.56	0.00	0.00
0387548	1 302	New Flyer Hybrid Bus Perform the E Check in accordance with Task Card service .bus	09/09/03	09/09/03	0.50	10.46	0.00	0.00	0.00
0385913	1 302	New Flyer Hybrid Bus E-insp. E-insp.	08/20/03	08/20/03	1.00	20.96	0.00	0.00	0.00
0385181	1 302	New Flyer Hybrid Bus left head light out replaced light ok	08/12/03	08/12/03	0.33	6.92	3.15	0.00	0.00
0383895	1 302	New Flyer Hybrid Bus insp service bus	07/28/03	07/28/03	0.25	5.23	0.00	0.00	0.00
0381975	1 302	New Flyer Hybrid Bus e .insp service .bus	07/07/03	07/07/03	0.50	10.44	0.00	0.00	0.00
0382797	1 302	New Flyer Hybrid Bus drivers seat ntf	07/16/03	07/16/03	0.27	5.59	0.00	0.00	0.00
0381589	1 302	New Flyer Hybrid Bus defect card holder broke replaced card	07/02/03	07/02/03	1.00	20.72	0.00	0.00	0.00
0388565	1 302	New Flyer Hybrid Bus Perform the B Check in accordance with Task Card	09/22/03	09/23/03	4.00	85.20	64.16	0.00	0.00

WO	Asset Task Part Number	Asset Description Task Description/Work Done	Opened	Closed	Hours	Labor Cost	Parts Cost	Equip Cost	Vend Cost
Perform the B Check in accordance with Task Card									
0387022	1 302	New Flyer Hybrid Bus A-INSP.	09/03/03	09/03/03	2.00	42.60	0.00	0.00	0.00
		A-INSP.							
0385225	1 302	New Flyer Hybrid Bus b-insp	08/12/03	08/13/03	4.00	85.20	71.10	0.00	0.00
		b-insp							
0382964	1 302	New Flyer Hybrid Bus A-Inspection	07/17/03	07/17/03	2.00	41.44	0.00	0.00	0.00
		A-Inspection							
Asset	302	New Flyer Hybrid Bus	Subtotal -->		16.60	350.60	530.97	0.00	0.00
			Grand Total -->		46.46	977.87	2667.14	0.00	0.00

CTTRANSIT Hybrid Bus Trouble Codes

Date	H301	H302	Notes
07/14/03	D1=7319=Inverter A Can link from TCM lost D2=7419=Inverter B Can link from TCM lost D3=6618=Can link lost with Inverter A	All clear	No service disruption - transparent to user
07/15/03	All clear	All clear	Follow-up check
07/21/03	All clear	D1=6624=Can link lost with Battery Controller D2=6619=Can link lost with Inverter B	No service disruption - transparent to user
07/29/03	All clear	All clear	Follow-up check
08/04/03	All clear	D1=6624=Can link lost with Battery Controller	No service disruption - transparent to user
08/13/03	All clear	D1s19=Inverter A Can link from TCM lost D2t19=Inverter B Can link from TCM lost D3f19=Can link lost with Inverter B	No service disruption - transparent to user
08/25/03	All clear	All clear	Follow-up check
09/02/03	All clear	All clear	Follow-up check
09/07/03	D1=8002=High Voltage Discharge Fault D2=7491=Inverter B Isolation Fault-Shutdown D3=7391=Inverter A Isolation Fault-Shutdown D4=7390=Inverter A Isolation Fault-Caution D5=7490=Inverter B Isolation Fault-Caution D6=6618 Can Link Lost with Inverter A	All clear	H301 Shut down and was flat bedded in. The system was checked and rest at the garage. A road test by a Technician noted a momentary loss of power on a 4.5 - 5 degree ramp @ 35mph. System reset on own and the problem cleared and could not be replicated. Bus was returned to service operating OK.
09/09/03	All clear	All clear	Follow-up check
09/15/2003 AM	All clear	All clear	Follow-up check
09/15/2003 PM	D1=8002 = High Voltage Discharge Fault D2=7391 = Inverter B Isolation Fault-Shutdown D3=7491 = Inverter A Isolation Fault-Shutdown D4=7390 = Inverter A Isolation Fault-Caution D5=7490 = Inverter B Isolation Fault-Caution		System failed light on the dash this afternoon. The following codes were logged in the transmission keypad. The bus was driven back under its own power, but the dash switched was cycled numerous times. The road call mechanic did not detect any fault, defect or reduced power situation.

CTTRANSIT Hybrid Bus Trouble Codes

09/25/03	All clear	D1=6634= Can Link lost with eng. Controller, long time out	These codes had no adverse affect on the bus operation
		D2=2312=Push Button Shift Selector	