

History of Vehicle Databases in the U.S.

In the early 1980's Michigan State Police Forensic Laboratory in East Lansing, MI was using a program written by Lt. Donald Collins and run on a Digital Equipment Corporation Model 11-70 Computer. Lt. Collins' program could search the database of vehicle stance acquired from manufactures, various publications and automobile dealers. In the late 1980's Lt. Collins rewrote the program to run on an 80286 (AT) Computer which cut the search time from 23 sec to about seven seconds.

In 1988 Lt. Roger Bolhouse of the Michigan State Police (MSP) entered into a partnership with Sgt. Lawren Nause of the RCMP. Through open cooperation and information sharing the Tracs program was developed. The data supplier Jato Dynamics was contracted to provide yearly updates. In 1993 I took over maintaining the Tracs database for the MSP Laboratories.

In early 2000, Jato Dynamics approached me with the idea of developing a web-based search program. This would provide web access to the vehicle stance data and would be up to date at all times. I provided them with the seventies and early eighties data they did not have. Jato released TirePrint.com in 2003 and sold subscriptions until 2009 when they discontinued the service.



Interpreting and Measuring Tire Tracks

When we examine a set of tire tracks we try to determine the front and rear tracks. We measure the tire width and the track width, (center to center, inside to outside, outside to inside, inside to inside, and outside to outside). When searching the database we use the track width most of the time

Some tire tracks are more difficult to analyze. These tracks in grass may require several people to measure. We average all the track measurements to obtain the best list of possible suspect vehicles.



What Vehicle Stance Databases Are Available Now

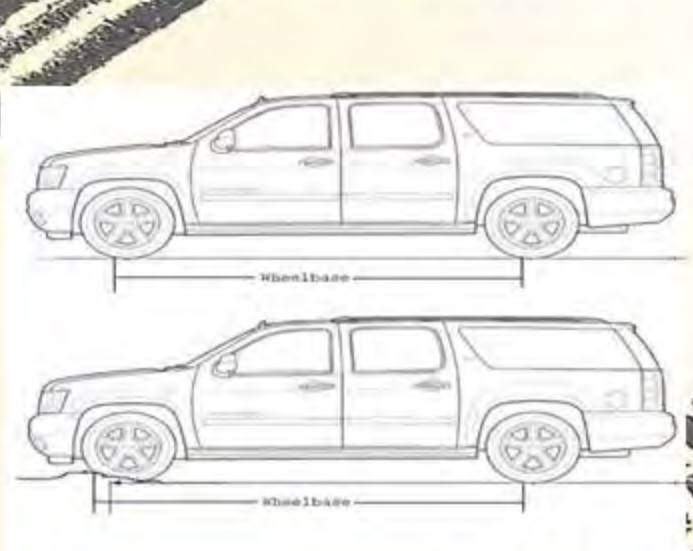
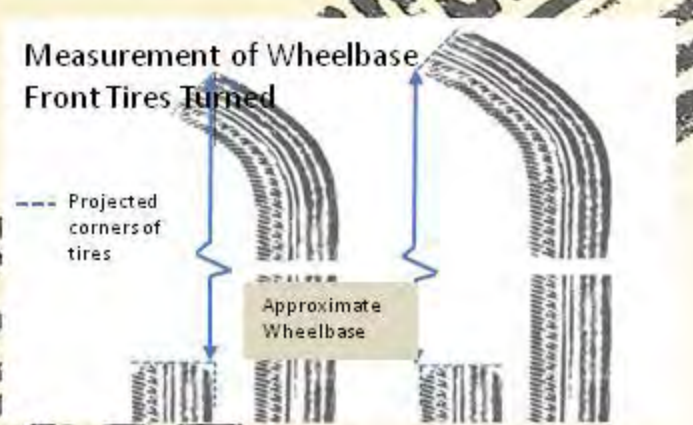
After Jato cancelled all subscriptions to TirePrint.com in October of 2009, forensic analysts began asking me what we can do to maintain the vehicle stance search service we were providing to agencies. I contacted Jato Dynamics and asked if they would be interested in selling me the data again to update our TRACS Program. They said they would not be interested in going back to that arrangement. They would be interested in having someone take over the distribution to agencies wanting access to the web site. They would open up the web site again for around \$32,000 a year. Whomever paid that fee and took over the administering access could charge whatever they wanted to recover the \$32,000. To date I have not been able to find anyone interested in this arrangement.

I have redistributed TRACS to our analysts. Although it contains vehicles from the 1970's to 2002 it is still helpful as an investigative tool. I have made contact with several companies that have vehicle stance data available in their accident reconstruction programs. Dan Walls at Chrome.com is interested in selling me the data; however, the cost to update TRACS from 2002 to 2010 would be about \$40,000 and \$5,000 per year after that. Dan Vonhoff of Expert Witness Services, Inc / 4N6XPRT Systems, gave me a link to a free program called Canadian Vehicle Specifications.

The Canadian Vehicle Specification program looks to be a possible replacement for TRACS. I contacted Jean-Louis Comeau, P.Eng, Chief, Collision Investigations and Research at Transport Canada and he said that the program is free and updated at least twice a year. He put me on a notification list to let me know when the updates come out. The program has the three most used measurements, front track, rear track and wheelbase. The current version contains vehicle data from 1971 to 2011.

I contacted the RCMP and spoke to Claudio Pellegrini and Debbie Brammall to find out what they were using since TirePrint.com was no longer available. They are using the Canadian Transport's Canadian Vehicle Specification program.

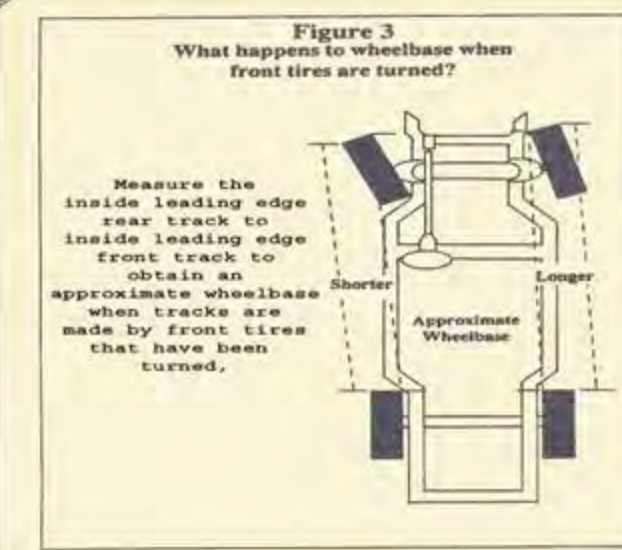
To be on the Canadian Vehicle Specification List contact:
 Jean-Louis Comeau, P.Eng
 Chief, Collision Investigations and Research
 Transport Canada
 Government of Canada
 2780 Sheffield, Ottawa, ON CANADA K1B 3V9
 Telephone: (613) 993-3661
 Fax: (613) 991-5802
 jl.comeau@tc.gc.ca



Another useful track measurement that can help narrow down the list of vehicles is the wheelbase. If you can locate a section where you can identify where the front and rear tire stopped you can measure the approximate wheelbase.

Project the inside corners of the tires and measure the approximate wheelbase from the inside leading edge rear track to the inside leading edge front track. If you measure from the outside corners of the tires the wheelbase measured will be shorter or longer than the actual wheelbase.

Depending on the surface the impressions are made on, you may not be able to get an accurate wheelbase measurement. If one tire leaves an impression in a softer substrate than the other tire you will need measure to an estimated point in the same plane as the other tire.



Using the Database

Averaging the center to center, outside to inside, inside to outside, inside to inside plus a tire width, and the outside to outside minus a tire width, the analyst will calculate the track width to search. The more measurements taken the higher confidence the analyst will have in the calculated track width and will help determine how narrow to make the search parameters.

When the center to center measurement of 64 inches +/- .5 inches was searched using the TRACS Vehicle Search Program, one of the vehicles on the list was a 1993 Chevrolet Suburban which was the type of vehicle the suspect owned.



Comparison of the Canadian Vehicle Specification Database

2000		TRACS			Canadian Vehicle Spec			FTD	RTD	WBD
Make	Model	FT	RT	WB	FT	RT	WB			
Acura	Integra	58.1	57.8	101.1	58.3	57.9	101.3	-0.2	-0.1	-0.2
Acura	NSX	59.4	60.2	99.6	59.5	60.3	99.7	-0.1	-0.1	-0.1
Acura	RL	60.9	60.5	114.6	61.1	60.7	114.7	-0.2	-0.2	-0.1
AMG	Hummer	71.6	71.6	130	71.7	71.7	130	-0.1	-0.1	0
Audi	A4	58.9	58.1	102.9	59.1	58.3	103.2	-0.2	-0.2	-0.3
Audi	TT	60	59.6	95.3	59.9	59.5	95.7	0.1	0.1	-0.4
Buick	Century	62	61.1	109	62.3	61.1	109.1	-0.3	0	-0.1
Buick	Park Ave	62.7	62.2	113.6	62.6	62.3	113.9	0.1	-0.1	-0.1
Chev	Cavalier	57.6	56.4	104	57.5	56.7	104	0.1	-0.3	0
Chev	Malibu	59	59.2	107	59.1	59.5	107.2	-0.1	-0.3	-0.2
Chev	Impala	62	61.3	110.5	61.1	60.3	110.7	0.9	1	-0.2
Chev	Blazer	57.2	55.1	107	56.7	55.2	107.2	0.5	-0.1	-0.2
Chev	Blazer	55	55.1	100.5	54.8	54.8	100.5	0.2	0.3	0
Chev	Silverado PU	65	65.9	119	65	66.2	119	0	0.3	0
Chev	Silverado PU	65	65.9	132.9	65	66.2	133.2	0	-0.3	-0.3
Chev	Silverado PU	65	65.9	143.5	65	66.2	143.8	0	-0.3	-0.3
Chev	Silverado PU	65	65.9	157.5	65	66.2	157.6	0	-0.3	-0.1
Chev	S-10	54.4	54.6	106.3	54.0	54.8	106.4	-0.4	-0.2	-0.1
Chev	S-10	57.2	55.1	108.3	56.7	55.2	108.4	0.5	-0.1	-0.1
Chev	Suburban	65	65.9	130	65	66.2	130	0	-0.3	0
Chev	Tahoe	65	65.9	115.9	65	66.2	116.2	0	-0.3	-0.3
Chrysler	300M	61.8	61.6	112.9	61.9	61.9	113.1	-0.1	-0.3	-0.2
Dodge	Caravan	62.9	64	113.3	63	64.2	113.5	-0.1	-0.2	-0.2
Dodge	Dakota	60.5	61.5	130.9	60.7	61.5	131.2	-0.2	0	-0.3
Dodge	RAM	69.8	72.9	134.6	69.7	72.9	134.7	0.1	0	-0.1
Ford	F-150	65.3	65.3	120.2	65	65	120.2	0.3	0.3	0
Ford	F-250	68.7	68.7	141.8	68.6	68.6	141.8	0.1	0.1	0
Ford	Focus	58.8	58.5	102.9	57.9	57.9	103.2	0.9	0.6	-0.3
Ford	Taurus	61.6	62	108.5	61.9	62.3	108.7	-0.3	-0.3	-0.2
Ford	Windstar	64.6	62.9	120.7	64.2	63	121	0.4	-0.1	-0.3

Before using the Canadian Vehicle Specification (CVS) database, it will be necessary to make comparisons with the old databases, TRACS and TirePrint.com. Preliminary comparisons for 2000 and 2002 have shown most vehicle stances differ between +/- .1 to .3 inches and a few up to +/- .9 inches. Since TirePrint.com is not available I have begun pulling printouts from cases where TirePrint.com was used for the search. One such search covered 2004 to 2009 and similar differences were observed as seen for 2000 and 2002. Analysts in the Michigan State Police Forensic Laboratories have been trained to search +/- .5 inches when using TRACS or TirePrint.com to search fairly accurate stance measurements. Using the CVS program may require a larger search window to avoid missing a possible suspect vehicle. Jean-Louis has been contracting with an individual to go out to measure new vehicles and supply the data to the Canadian Transport. The data from Jato Dynamics is collected from vehicle manufactures. These differences may be attributed to the methods used to acquire the data. More research needs to be done before adopting the CVS database.

Bibliography:

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- The history of Computing at BRL, FTP.ARL.MIL
- Dawn of the Personal Computer: From Altair to the IBM PC, www.maximumPC.com
- Acknowledgement:
Megnan Teunis for her assistance in comparing TRACS and CVS databases