MINUTES OF THE MEETING
HIGHWAYS & TRANSPORTATION COMMITTEE
50TH LEGISLATIVE SESSION
HOUSE OF REPRESENTATIVES

March 19, 1987

The meeting of the Highways & Transportation Committee was called to order by Chairman John Harp on March 19, 1987 at 1:00 p.m. in Room 317 of the State Capitol.

ROLL CALL

All members were present. Also present was Mary McCue, Legislative Council researcher.

Bills to be heard today were SB 369 and SB 187.

SENATE BILL 369

Senator Larry Tveit, Senate District 11, Roosevelt County, sponsored SB 369. This is an act requiring that railroad public crossing signs have reflectorized strips on the back sides of the crossbuck blades and on the post; and provides an immediate effective date.

Sen. Tveit handed out some proposed amendments. (EXHIBIT #1) Railroads had some concerns so he is offering these amendments. These reflectorized strips will be placed on both sides of the crossbuck arms and on the posts in such a manner that they can be better seen. These would be put on all railroad crossings where public roads cross, except those that have the arms and lights in place. There are approximately 3400 of these crossbucks in Montana. The railroads are to have these all installed within two years. He feels this is a good safety measure. He handed out EXHIBIT #2 showing how the strips would be installed.

PROPONENTS

JOHN ETCHART works for Burlington Northern and is appearing on behalf of the BN. They like the bill.

OPPONENTS - None

QUESTIONS FROM THE COMMITTEE - None

Sen. Tveit closed saying this is a real good safety measure and he thinks this is good for the railroads and the public, and will show up quite visibly at night to any cars or vehicles coming onto railroad crossings: very good for safety.

(Rep. Tom Jones will carry this bill on the House floor.)

EXECUTIVE SESSION

Rep. Jones moved DO CONCUR on Senate Bill 369. He then moved the proposed amendments be adopted. The motion was changed to BE CONCURRED IN AS AMENDED. The motion was ADOPTED unanimously.

Rep. Roth questioned if there would be confusion by putting these reflectorized strips on both sides. Mr. Etchart said you will be able to see both crossbucks: the one facing you and the one behind you, and it shouldn't be confusing as to where the boundaries are.

SENATE BILL 187

Senator Bill Farrell, Senate District 31, sponsor, said this is the famous "Triple Trailer" bill. It is an act allowing special vehicle combinations to operate by special permit upon interstate highways; increasing the special permit fees for special combinations; authorizing the Department of Highways to prescribe driver qualifications, equipment, and safety standards specifically for special vehicle combinations; amends 61-10-107 and 61-10-124; and provides an effective date.

Sen. Farrell said this is an economic issue. It allows LTL carriers to attach three trailers in Montana. The state has increased the fuel tax and some of the GVW fees. Only by a limited permit can three trailers be used. This has the support of many of the shippers in the state and allows them to operate at a little less cost if they can pull more trailers, and can haul more viable products. There is to be a fee for this permit, increasing revenue to the state.

PROPONENTS

BEN HAVDAHL, representing the Montana Motor Carriers Association, handed out a memorandum on the bill, EXHIBIT #2, copies of the reproduced charts, EXHIBIT #3, a copy of the statement, EXHIBIT #3a, and a pamphlet explaining the Bridge Weight formula, EXHIBIT #4. The Motor Carriers Association has strongly supported SB 187. (In file folders given the committee, are copies of letters from 250 shippers from all over Montana supporting this bill.)

SB 187 allows three semi-trailers, not exceeding 28½' each to be pulled by one tractor when granted a special permit by the DOH. This combination will be limited to the four-lane divided interstate highways. Mr. Havdahl explained on Exhibit #2 the charts of Exhibit #4. The triples will have

less axle weight than is presently allowed on each axle.

Exhibit #4 of exhibit #3 shows that Montana is totally surrounded by 12 states and 4 Canadian provinces that now allow triple trailers to operate in their jurisdictions. If Montana adopts this bill, it opens up a tremendous opportunity for the movement of freight.

Braking ability of triples is superior because they have more tires on the pavements. There is a unique braking system required on triples: the brakes work okay from the back to the front. This eliminates the possibility of jackknifing.

The Statement of Intent (EXHIBIT #5) will require the DOH to promulgate regulations for equipment standards, driver standdards, and a whole array of requirements under regulations. The working draft of the regulations will be circulated to the committee. (EXHIBIT #6) On the last paragraph of the Statement of Intent, the Legislature intended that part of the highways may restrict the operation of special combinations during times of adverse weather or other conditions that make such operations unsafe or inadvisable. It is expected that their operators will operate under highway regulations.

ROBERT COCHRANE, Consolidated Freightways driver from Billings, transport operator for 19½ years, representing the Teamsters Union, also on behalf of himself and employees who are interested in the future of this country, think their futures lie in the use of these triple trailers in order to be competitive in the industry.

ANDY DOSS works for Yellow Freight System out of Salt Lake City, Utah, and is President of the Union Steward for Salt Lake Drivers. He has driven triples, enjoys driving them, and enjoys the increase in pay. With the proper qualified drivers, proper maintenance, abiding of state laws, he welcomes SB 187.

ERNEST DONOVAN, Billings, Montana, drives for Consolidated Freightways. He has been with them for 35 years, has over 3,360,000 miles behind him, is definitely looking to the triples in the future, not only for himself, but for the state of Montana and the trucking companies. They would appreciate your support.

WARREN HOEMANN, Director of State Government Relations for Yellow Freight System, handed out EXHIBIT #7. Yellow Freight is a nationwide LTL carrier operating through 49 states.

They are a newcomer to Montana, having been here about 18 months. They have five facilities currently in Montana and would like to grow here. They see growth here through the operation of triples. See EXHIBIT #7 among which there is a letter from Colorado when they appeared before the Wyoming Highway Commission. Colorado's experience with triples is very favorable. There is a partial list of reports other states have published on their tests with triples, a list of braking tests, a chronological development of truck size and weights in the western U.S. including Montana going back 20 years showing over 50 distinct tests of these combinations and the favorable reaction of the states. Increased productivity can only come from longer combinations and greater allowed combination weights. Such increased productivity is not undesirable if adequate emphasis is placed upon driver experience and driver qualifications. Driver qualifications are built into rules and regulations. There is a study entitled "Safety Implications of Structural Changes" occurring in the United States Motor Carrier Industry sponsored by the Triple A Foundation for Traffic Safety.

STAN NEWMAN is currently the trouble manager for Consolidated Freightways, Great Falls, MT. (EXHIBIT #8) Consolidated Freightways has been in Montana for 40 years, has a substantial investment in Montana and wishes to continue to expand. They have had a great deal of experience with triples in other states and other areas. There is a false perception that we are creating a monster. The argument that all trucks are evil is ridiculous and impractical. It is necessary to have trucks to service Montana. Consolidated Freightways now has 180 employees and a payroll of $6 million. Those in attendance here represent 1000 employees and over $30 million in payrolls. They want this bill to pass because they think it is beneficial for everyone involved.

BOB SWAN, Safety Supervisor for Consolidated Freightways, Salt Lake City, is responsible for the safety operation of their triples and doubles fleets in the states of Utah, Nevada, and Idaho, and a small portion of Oregon, and will be responsible for the triples operation when it comes into Wyoming in May. (EXHIBIT #9) He feels triples can be operated safely. All of the carriers work closely together and with the state enforcement people to get the triples off the roads in bad weather. They don't wait for the state to mandate getting them off. Montana regulations will be fully implemented. They would appreciate support of SB 187.

MELVIN GREEN, terminal manager for A&R Freight System of Great Falls, MT, appeared in support of SB 187 for authorization of the operation of triples on the interstate system in the state of Montana. By the use of triple trailers we will eventually have cheaper freight for the consuming public, and through more productive equipment and transportation, secure our jobs in the state. (EXHIBIT #10)

Rep. Harp had to leave the committee, so Rep. John Mercer took the chair.

KENNETH POWER, linehaul manager for the western area of the A&R Freight System, is in support of SB 187. People who are unfamiliar with the triple trailer operations have a great concern for safety. (EXHIBIT #11) Their safety record speaks for itself. A line of communication has been established to get weather information, road condition reports, in one location which is charged with the responsibility of compiling this information each week. This information is available to all carriers. This report is updated by calls from drivers, safety supervisors, call-free numbers provided by state agencies, ports of entries and other sources. They make their determination at that time based on the forecast of the actual weather on the highways whether they go into a triple or stay in the double load. They intend to have triples off the highways before the states tell them they have to be off. If by chance they get caught in an unpredictable situation and it is unsafe to operate triples, they will drop the back box and proceed with a double load. They will operate triple trailers only when it is safe to do so.

THOMAS HARDEMAN, Public Affairs Manager of the United Parcel Service, has been with them for 32 years. They operate in all 48 contiguous United States, and also have operations in Hawaii, Puerto Rico, Alaska, and 16 foreign countries and have just started operations in Japan. Decades of experience with triple trailers have demonstrated that they are both economical, and safe to operate. (EXHIBIT #12) UPS currently operates triple trailers in 10 states. The combinations are extremely safe to operate. UPS is a significant operation in Montana right now, and in Appendix B you will see a 25 percent growth in the last four years. They drove over 12 million miles in Montana last year. UPS has had very excellent experience in the operation of triple trailers and strongly supports this legislation.

DOYLE SEALE, from the UPS office in Portland, Oregon, has been with them for over 21 years, six years of which he was a fulltime driver of trailer combinations, and 5 years as a fulltime driver trainer, and 10 years as safety manager and also driver trainer. Oregon began testing triple operations in 1967 and UPS began testing triple operations in 1971. The initial permits for tractor trailer operations were quite restrictive in that they could not operate during wet weather. That eliminated a lot of the operation of triples. However, as experience developed and safe operations were demonstrated, these restrictions were greatly relaxed. In 1980 they were allowed to operate in wet weather and found that both initial training was required, primarily aimed at the coupling and uncoupling procedure and the maneuvers on 90 degree turns. The driver acceptance of triple operations has been very positive. Oregon has found triple trailer units to be entirely safe and compatible with highway and traffic conditions in the state. The Columbia Gorge, which is over 100 miles long, experiences high winds on a daily basis. They dispatch over 30 units per day through the Columbia Gorge. It is so noted for its windy conditions that it has become a wind surfer capital of the world. Wind has not been proven to be a real problem and they operate on a daily basis in that area. Triple trailers have become a way of life at UPS as well as with numerous other trucking companies in Oregon as well as the motoring public. UPS and the other companies here today have too much at stake in terms of image and reputation to risk placing on the highways of the state of Montana unsafe equipment. Without reluctance; as a driver, driver trainer, and as safety manager, he recommends a favorable response to SB 187.

JAMES A. O'BRIEN, Director of Safety and Security for Edson Express, Inc, with many location in Montana, said that although they serve markets outside the Rocky Mountain region, they consider the states of Colorado, Wyoming, and Montana as the dominant core of their existence. With the acquisition of the Salt Creek Freight Lines in April 1986, it solidified that position. The purchase preserved many jobs for Salt Creek employees in Montana, much needed revenue to the state and will allow business industry and individuals to retain part of their profit dollars. Simple math indicates that 3 trailer loads of freight travel for less money than 2 trailer loads of freight hauled by a single tractor. Part of the savings could, of course, be passed on to the shipping and receiving public. More profit dollars goes to all participants right down to the wage earner. Growth in itself

makes for expansion of real estate and equipment which translates into tax dollars for the state and local governments. Expansion in several cities would mean more tax dollars to the state, and more employees. The use of triples would help make this possible by increasing our line haul miles. Why some perceive that triple trailers are unsafe, is unknown. In reality, triple trailer combinations have a better safety record than all other single and combinations. (EXHIBIT #13)

KEN COOK, West Best Freight System, Missoula, MT, employs 60 people and has a payroll in excess of $11.5 million. They are very proud of their safety record. They currently operate Rocky Mountain Doubles, are primarily a truck load carrier, and have had no accidents with this particular type of operation for the 3½ years since they have been using them. This bill would help them offset the high cost of operations in Montana because of high property taxes and Worker's Compensation being what they are, and they could give some of this back to them which will be passed on to the shipper. They operate the long haul operations with sleeper type of equipment with a maximum amount of allowable weight set by Montana, and haul commodities basically in and out of Montana. They really want to emphasize that they are a Montana company and will be able to take advantage of this bill and will ultimately help the people of the state.

FRANK HAULEY, engineering consultant with the Western Highway Institute, a non-profit research organization sponsored by the trucking industry in the Western U.S. and Canada, spoke next. WHI is no longer doing research in testing and operation of LCV's because the safety and performance record of triple and other LCV combinations is so firmly established that they are doing other kinds of research. The model rules and regulations report that Western Highways prepared was used as a basis for the draft rules that Montana has strongly supported to regulate the operation of triple trailers. Most states are doing something like that. The real laboratory for testing equipment of this kind is out on the highway. (EXHIBITS 14 and 15)

STUART DOGGETT, representing the Montana Chamber of Commerce, supports this bill for the trucking industry. They feel it is an important bill for bettering the economic climate in Montana, and urge your support for SB 187.

REP. CHARLES SWYSGOOD supports passage of SB 187.

MR. HAVDAHL left copies of 259 letters from Montana shippers supporting SB 187. (EXHIBIT #15a)

OPPONENTS

TOM HARRISON, Montana AAA opposes SB 187. The attempt has been made for the last 10-12 years to bring triple trailers to the state and has been in prior sessions and administratively attempted unsuccessfully through the Highway Commission through the Administrative Procedures Act. He doesn't know that that should change. They surveyed their members, 77,000 of them, and this is the one area to which the response was the highest as far as not allowing triple trailers on interstate highways. He agreed with the person who said perhaps we are dealing with perception of danger and maybe that is why they get back such a high response to their survey. It is particularly true with older drivers, but it is across the board as far as their concerns for these being on the road. He thinks they are concerned for the possibility of their injury rather than injury to the roads. The axle weight is obviously not what hits the oncoming smaller car in today's economy. The total weight of the vehicle is involved in the crash, and as you increase that weight, if it involves a second vehicle, that disparate weight ratio is what determines the injury that will be felt by the other vehicle that is involved. (EXHIBIT 16) This study is a crash involvement with large trucks by configuration. It is a January 1987 study and it doesn't have much information on triples---it does talk about the overinvolvement on page 14 of this study, that says double configuration trucks are more likely to be in crashes than tractor trailers. They are consistently overinvolved regardless of other truck operating characteristics, driver characteristics, or roadway conditions of both single and multiple vehicle crashes, even if compared to just tractor trailers. The study shows that doubles have a much higher crash frequency than other truck configurations; however, this could be said to be an advantage because there would be fewer truck trailers on the road if triples could haul larger loads.

A net benefit might be realized by substantial decreases in truck traffic because of greater cargo carrying capacity, reducing total mileage. As the configuration increases, it would seem that would be true, as you increase even further the number of trailers. He handed out another article (EXHIBIT #17), regarding accidents in spite of new signs warning of a dangerous curve. He would like to think it is true

that these triples will be off the road in inclement weather. In this bill the way it stands, the motor carriers seek to put the duty on the state of Montana as far as the inclement weather pull off. If they pull them off themselves, there is no problem, but if they don't, aren't you by this bill putting the state of Montana in every triple trailer accident because the state of Montana ought to have had the rules and regulations and gotten the trucks off the road. I think you are, and you are giving the state of Montana liability, obviously comparative liability, with the owner of the truck, but a liability in every one of those accidents. He suggested an amendment saying that the operators are prohibited from operating in inclement weather and have to pull off at the very next exit, drop that third trailer, and then the liability will be totally theirs rather than allowing them to make the state dictate that they get off, rather than having the state defend right along with them each accident that occurs as a result of weather.

RAY KUNTZ, Sales Manager for Tiger Tripp, Watkins, and Shepard Trucking, terminal carriers with terminals in Missoula and Helena, testified next. (EXHIBIT #18) They strongly opposed this bill or any other bill that would allow triples. Most of the small truckers cannot compete with the triple trailer market. Legalizing triple trailers has the potential for reducing the number of trips coming into and going out of Montana by one-third. That will reduce jobs, personal income tax collected, and will reduce personal expenditures of the drivers who live here that lose their jobs. By reducing diesel fuel consumption one-third, the state will be hurt. The fiscal impact on the Highway Department would be devastating. Based on the lost revenue from diesel taxes and lost jobs, they feel the bill would have a very negative effect on the economy of Montana. If this bill does pass, they will pull triple trailers, not because they want to, but because they will have to in order to compete.

MARGARET HOLLOW, Helena housewife, has lived here for 45 years and is in business where truckers serve them. She can't believe triple trailers are being considered in the state of Montana. Weather conditions are terrible, the interstate is always in a state of being repaired with only one lane open at times, and it is impossible to pass a double trailer because of the snow being kicked up. You don't even know if you are on or off the road. There are thousands of mothers and senior citizens in the state who are intimidated by a double trailer, let alone a triple trailer. Who are the highways for? Are they for us, the people of Montana, or are they for these trucking companies to make money. Do you think that the money

they are going to save is going to pass on down to my groceries? I don't. It is impossible to even think it is. We were forced to take double trailers because of the federal government. We just don't stand a chance on our Montana highways in the condition they're in with one lane plowed and one lane not plowed so that it's dangerous to pass in snow.

QUESTIONS (OR DISCUSSION) FROM THE COMMITTEE

Rep. Roth said there is indication that the triples use their braking system starting from the rear forward. Is that going to be on all triple trailers that come out in Montana? Are you going to be using existing trailers and phase that in? Mr. O'Brien said they would be using that on existing trailers. Warren Hoeman said the reference is to fast air release valves which help the air pressure get to the back faster. The time is then adjusted on the brakes so the brakes apply to the back toward the front to keep the combination straight. That system is used by all doubles carriers right now. This would not be a new system. It is common practice right now. It is now a common practice with tractor semi-trailers. It will be a requirement in the regulations for triples.

Rep. Roth said there was reference made to the fact that if we increase the hauling capability by one-third, then you are going to be in a situation where you have too many drivers. It appears that there are going to be some jobs lost here as a result of that. Mr. Newman said that part of the testimony was that it will enable them to haul more materials in and out of Montana that they currently do not haul, so there will be an increased volume of freight coming into Montana. There is a lot of freight that they cannot afford to haul into Montana. Rep. Roth asked what they would be able to bring into Montana with triple trailers that they cannot bring in now. Mr. Newman answered there is nothing physical that they couldn't haul, but maybe through the rate structure here they would be able to haul it in cheaper, so, therefore, their cost base would be spread out a little more if it is going to cost them the same amount of money to haul triples as it does doubles. But if we can get more revenue we can get different types of freight, different volume of stuff that is coming into Montana that we don't currently haul. And the same way out--we could haul volume traffic. Rep. Roth asked if you are saying that will balance out by being able to increase your volume, you are going to be able to keep your existing drivers. You anticipate no layoffs of any existing drivers? Mr. Newman answered by saying what our layoffs is based on is the economic situation in the state. With SB 187, he sees no relationship to layoffs.

Rep. Swysgood asked Mr. Harrison what his definition of inclement weather was. Mr. Harrison said that is the type of conditions that the regulations would have to define and the jury would have to find reasonable. If those two entities could define it, this body ought to be able to define it. Rep. Swysgood asked, then you are not totally satisfied that in the Statement of Intent where it says that during periods of adverse weather conditions these will not be operated? Mr. Harrison replied that is obviously the intent and agreed with that good intent. Instead of putting that on the state to determine which is the question of fact, just say simply that "they will not be operated in that inclement weather." "Shall" would be a better word than "may". Rep. Swysgood asked him if he had any figures or facts on accident ratios that compare the number of miles run by trucks to those same miles run by automobiles. Mr. Harrison said he could get those figures, but at the moment he has no idea of such statistics.

Rep. Swysgood asked Mr. Kuntz of Tiger Tripp if he said he wouldn't be able to compete in this market. Is his carrier primarily an LTL carrier or a truckload carrier. He answered that Tiger Tripp is primarily a truckload carrier, and Watkins and Shepard is primarily an LTL carrier in state, and they operate in 11 western states. What he meant by competing was that a little guy with 5, 6, or 10 trucks won't be able to buy triple trailers and he is going to lose the freight, and his drivers are going to lose their jobs. A job is a job regardless of who the employer is. Rep. Swysgood was having some problem understanding why one 28' trailer was so much more expensive than a 40' or a 32' or whatever they are using in their doubles operations. Mr. Kuntz said that is whether you have the terminals to bring those trailers to unhook or rehook them. You have to be able to combine those trailers in strategic locations in order to effectively pull and operate them.

Rep. Stang asked Mr. Harrison if he had information on truck wrecks on various sections of Montana interstate highways. Mr. Harrison didn't have that information, but he thought the Highway Patrol or possibly the traffic safety people would. Mr. O'Brien said they had certain information about that and also that Highway Traffic Safety in the Department of Justice has computerized accidents by sections on any one particular section in the state. There are several that have higher accident rates than others, but that is all available.

Rep. Stang asked Mr. Wicks if, under the provisions of this bill, certain portions of the interstate highway could be closed to these triples because of the makeup of the road and the number of accidents experienced by trucks in that area. (He had one particular area in mind.) Mr. Wicks said he thought they could if it was determined that that area was unsafe for this type of truck.

Rep. Roth asked if there was any estimate of the increase of fees that would be paid for going from doubles to triples for the state. Mr. Havdahl advised there is a fiscal note that estimates revenue, but it is difficult to determine. The figures on the fiscal note are probably on the low side. It is difficult to know if this bill passes how many of these units will operate on Montana interstate highways.

Rep. Stang siad that if we had this inclement weather situation, they could drop a trailer. Where will they drop these trailers? Just along the interstate or go to these towns and drop them in people's driveways or what? Mr. Havdahl deferred to a CF driver. He said they had obtained permission at almost every off ramp--a service station, truck stop. They drop them at predesignated areas and have one almost every 25-30 miles all the way to Salt Lake City. Rep. Stang differed with him since trucks have dropped in front of his store and have had to have the truck towed out of his driveway.

Rep. Harper said if it is going to save 30% of the diesel consumed in this state, how is that going to translate into the loss of revenue, and how is that going to affect our highway construction program? Mr. Wicks answered that that figure seems high, but he didn't know where it came from. If we lost 27% of the diesel tax, we would probably lose about $5 million for the year.

Rep. Harp explained to Rep. Harper that is assuming that every truck in Montana would be triple trailers. Mr. Wicks said he disagreed with the 27% but if it were 27% it would translate into about $5 million.

Rep. Harper said the statement was made that there is going to be the same amount of drivers' jobs because there is going to be more loads hauled. He was wondering how this added increase or demand comes about in Montana and how you can increase jobs unless somehow the demand for these products goes up. Mr. Kuntz answered that he didn't know how you can keep the same number of loads coming in and going out and decrease the number

of trips by adding more trailers and keep the same number of jobs. If any of these guys can tell me how they can do that he would like to hear it. Mr. O'Brien said statistically if you load a trailer in Denver, Colorado, and your destination is Washington, the miles travelled are fractional pull miles if you bypass Montana although it might be the shortest distance to go through Montana, but the advantage in using the triple trailer is just great enough that they will bypass Montana and take the route to I-5 to Seattle. Consequently, the vehicle will not travel at all in Montana.

Rep. Harper said you are talking about a benefit for out-of-state drivers. We line haul trucks from Billings and Missoula and those drivers will receive the benefit of that. Part of the whole configuration of equipment might be a through-trailer but some of it will be destined for Montana.

Mr. Green, A&R, made a comment about through-traffic. If all the traffic presently running through Montana would be driverted, people would be transferred out of here, and people would lose jobs.

ADJOURNMENT

Chairman Harp had to close the hearing because of lack of time. The meeting adjourned at 2:35 p.m.

JOHN HARP, Chairman

DAILY ROLL CALL

HIGHWAYS & TRANSPORTATION COMMITTEE

50th LEGISLATIVE SESSION -- 1987

Date [illegible]

NAME	PRESENT	ABSENT	EXCUSED
Rep. John Harp, Chairman	✓		
Rep. William Glaser, Vice Chairman			✓
Rep. Bud Campbell	✓		
Rep. Harry Fritz	✓		
Rep. Hal Harper	✓		
Rep. Tom Jones	✓		
Rep. Mike Kadas			✓
Rep. Roland Kennerly	✓		
Rep. John Mercer	✓		
Rep. Helen O'Connell	✓		
Rep. Bing Poff	✓		
Rep. Rande Roth	✓		
Rep. Clyde Smith			✓
Rep. Barry Stang	✓		
Rep. Charles Swysgood	✓		
Rep. Fred Thomas	✓		

STANDING COMMITTEE REPORT

March 19 19 87

Mr. Speaker: We, the committee on HIGHWAYS & TRANSPORTATION

report SENATE BILL 369

☐ do pass ☒ be concurred in ☒ as amended
☐ do not pass ☐ be not concurred in ☐ statement of intent attached

REP. JOLL HARP Chairman

REQUIRING REFLECTORIZED STRIPS ON RAILROAD CROSSING SIGNS

BE AMENDED AS FOLLOWS:

1. Page 1, line 8.
   Strike: "STRIPS"
   Insert: "MATERIAL"
   Following: "ON THE"
   Insert: "FRONT AND"

2. Page 1, line 9.
   Strike: "AND ON THE POST"

3. Page 1, line 13.
   Strike: "strips"
   Insert: "material"

4. Page 1, line 16.
   Strike: "strips"
   Insert: "material"
   Following: "on the"
   Insert: "front and"

5. Page 1, line 17.
   Strike: "and on the lower half of the post"

6. Page 1, lines 19 through 22.
   Strike: "and on any" on line 19 through "length" on line 22.

Rep. Tom Jones will carry SB 369 in the House.

Third reading copy (Blue color)

AMENDMENTS ON SENATE BILL NO. 369.

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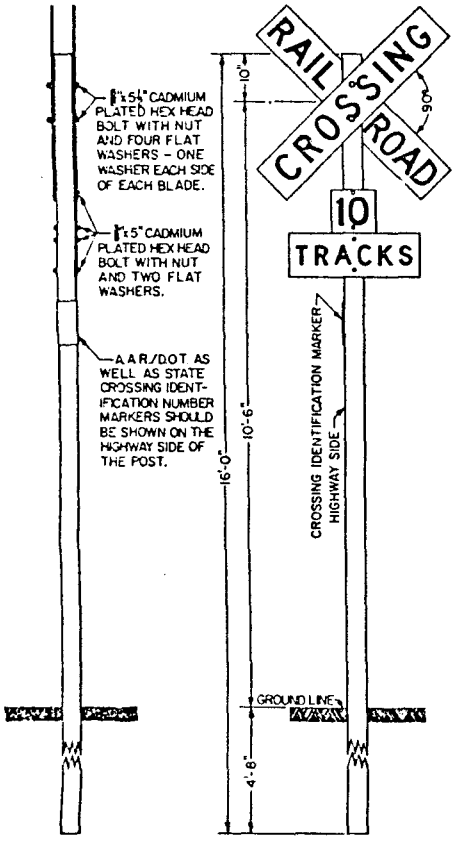
6. Page 1, lines 19 through 22.
Strike: "and on any" on line 19 through "length" on line 22.

C.S.
13

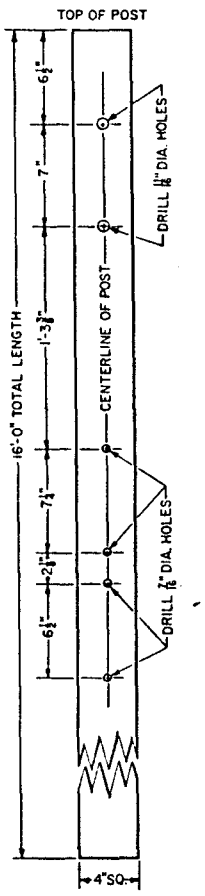


ASSEMBLED ELEVATIONS

LOCATION:

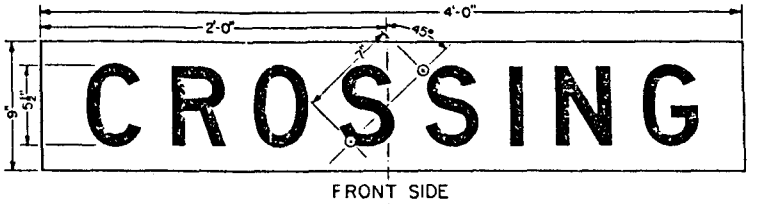
ONE SIGN TO BE PLACED ON THE RIGHT HAND APPROACH TO EACH CROSSING WHERE PHYSICALLY FEASIBLE AND LOCATED TO ADMIT THE BEST VIEW FROM THE ROADWAY. SET CENTER OF POST 20 FEET FROM THE CENTER LINE OF THE NEAREST TRACK, WITH BLADES AT RIGHT ANGLES TO THE ROADWAY, AND LOCATED NOT LESS THAN 8 FEET FROM THE EDGE OF THE ROADWAY SHOULDER. WHERE THERE IS NO SHOULDER, CENTER OF POST SHOULD BE LOCATED NOT LESS THAN 14 FEET FROM THE EDGE OF THE TRAVELED WAY. IN URBAN AREAS WHERE A CURB IS PRESENT, CENTER OF POST SHOULD BE LOCATED NOT LESS THAN 4 FEET FROM THE CURB FACE. ON ONE-WAY STREETS, SIGNS ARE TO BE PLACED ON BOTH THE RIGHT-HAND AND LEFT-HAND SIDES OF THE ROADWAY APPROACH.

MORE THAN TWO SIGNS MAY BE NECESSARY WHERE UNUSUAL LOCAL CONDITIONS DEMAND OR WHERE THE DISTANCE BETWEEN TRACKS CROSSED EXCEEDS 100 FEET MEASURED ALONG THE ROADWAY.



POST DETAIL

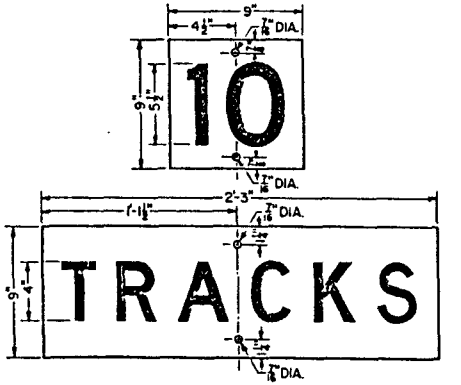
4"x4" WOOD POST TO BE 5% SOLUTION PENTA TREATED. ALL HOLES MUST BE DRILLED PRIOR TO APPLICATION OF TREATMENT.



BLADE DETAIL

BLADES TO BE ALCC [illegible]UDED SECTION NO. 83779, ALUMINUM ALLOY 6063-T42. TWO DOUBLE FACED BLADES AR[illegible]QUIRED FOR EACH SIGN.

BACKGROUND SURFACE TO BE SCOTCHLITE NO. 2870 SILVER HIGH INTENSITY REFLECTIVE SHEETING. LETTERING TO BE SILK SCREENED 5½" BLACK LETTERS PER A.A.R. SIGNAL MANUAL DRAWINGS 1712A AND 1727B.



MULTIPLE TRACK SIGN DETAIL

MULTIPLE TRACK SIGNS TO BE .081" NO. 6061-T6 SHEET ALUMINUM. ONE EACH SINGLE FACED SIGN FOR EACH CROSSING SIGN WHERE TWO OR MORE TRACKS ARE TO BE CROSSED.

BACKGROUND SURFACE TO BE SCOTCHLITE NO. 2870 SILVER HIGH INTENSITY REFLECTIVE SHEETING. NUMBERS TO BE 5½" BLACK AND LETTERS TO BE 4" BLACK SILK SCREEN LETTERING PER A.A.R. SIGNAL MANUAL DRAWINGS 1700C, 1713B AND 1714A.

UNION PACIFIC RAILROAD
COMMON STANDARD

HIGHWAY CROSSING SIGN

NO SCALE ADOPTED OCT. 1904
REVISED NOVEMBER 9, 1979

L 8

EXHIBIT #1
Date 2-12-1987
SB 187 - Sen. Bus.
Havdahl

MMCA STATEMENT ON SB 187

Mr. Chairman and members of the Committee.... I'm Ben Havdahl, Executive Vice President of the Montana Motor Carriers Association..... We strongly support SB 187.

MMCA has some 325 motor carrier members and 125 supplier members and the carriers range in size from one-truck operators to companies operating fleets of trucks up to 400 plus in numbers. These carriers haul all varieties of commodities that move into, around, and out of Montana, 95% of whom operate in interstate commerce under ICC authority....

This bill passed by the Senate with a final vote of 43 to 6 will enable the expansion and increase truck productivity for general commodity and other carriers in Montana resulting in as much as a 50% increase in truck productivity per unit, appreciably cut costs to carriers resulting in cost savings to shippers, and will save as much as 27% in diesel fuel consumption when compared to the current double trailer operation of these carriers.... SB 187 has the potential for helping to preserve the current level of jobs these carriers have to offer and for the expansion of future job opportunities as well. All of which will have a beneficial impact on the economy in Montana.

A survey conducted by Montana State University of some 475 firms in Montana and surrounding states as to the importance of various factors in locations and expansion ranked transportation costs as one of the five most important factors in business climate influencing a firm's desiring to locate (other labor force availability, labor costs, state regulatory practices and state and local property taxes) SB 187 is aimed at stabilizing or even reducing costs of truck transportation of general commodities.

The general trucking industry in the state has suffered economically in the past four or five years. Since 1983, state fuel taxes have increased 55% - federal fuel taxes 275%; federal heavy truck tax 162% and excise taxes 32 to 45%. This session added an additional 18% increase in diesel fuel taxes and we have witnessed a 25% increase in Workers' Compensation costs, skyrocketing insurance costs, and other costs pyramiding upon the industry.

An improved economic benefit for carriers would be welcome....

We have a number of proponents desiring to testify this afternoon representing the carriers in Montana who are vitally interested in the adoption of SB 187 and will elaborate for the benefit of this committee on these and other points. Included among them are Yellow Freight Company, Consolidated Freightways, ANR Garrett, United Parcel, Edson Express and West's Best Freight System. Also, we have asked the Western Highway Institute, headquartering in San Bruno, California, to testify. In addition, these are organizations representing shippers and businesses supporting this bill....

First, I would like to make a few preliminary comments and provide some background information for the committee.... We have prepared some visuals on showcards to help clarify details relating to size and weight information. The visuals have been reproduced with a memorandum of explanation for distribution to the committee.....

The bill's statement of intent calls for promulgating rules and regulations by the Department of Highways. We have a working draft of uniform rules and regulations that are in effect in most of the surrounding jurisdictions. (Refer to memo and visuals)

MONTANA MOTOR CARRIERS ASSOCIATION INC.

B.G. HAVDAHL, EXECUTIVE VICE PRESIDENT
501 NORTH SANDERS
P.O. BOX 1714, HELENA, MONTANA 59624
TELEPHONE: AREA CODE 406 442-6600

February 12, 1987

TO : Members of the Montana Legislature

SUBJECT : SB187 Special Vehicle Combinations

WHAT THE BILL DOES

SB187 is a bill allowing special vehicle combinations consisting of three semi-trailers not exceeding 28 1/2 feet each to be pulled by one truck tractor when granted a special permit by the Department of Highways. This combination will be limited only to four-lane-divided Federal Interstate Highways.

LAW ALLOWS SIMILAR COMBINATION NOW

Current Montana law allows a truck with a 28 foot box and two 28 foot semi-trailers to operate under special permit. The law, however, precludes a combination with exact cargo carrying capacity and the exact size and weight capacity consisting of truck tractor and three seimi-trailers. This combination will be restricted under SB187. (See Exhibit 1)

EXTENSION OF DOUBLES COMBINATION

Current Federal and State laws also allow special vehicle combinations consisting of two 28 1/2 foot semi-trailers on all highways in every state. Montana law in 61-10-104 states that this combination is not subject to an overall combination length limit.

Exhibit 2, shows three examples of double trailer combinations and the varying length depending on the type of truck tractor used in the combination. Truck tractor sizes vary from 9 feet to 17 feet two inches in the examples. Trailer length cannot exceed 28 1/2 feet however.

Exhibit 3, shows the same three examples when authorized to operate a third semi-trailer in the combination. Since current law does not restrict the size of the truck tractor used in doubles it does not in triple combinations, hence the examples over all length varies from 100 feet to 110 feet in length.

DOES NOT INCREASE WEIGHT

Existing law restricts the single axle load weight to 20,000 pounds and the double axle (tandem axle) load weight to 34,000 pounds. The overall gross weight cannot exceed the statutory formula B maximum. All the examples show their axle weights to be far under the allowable. Increased GVW fees and permit fees provide substantial increases in total fees paid to the state for operating triples when compared to the fees for doubles.

TRIPLES PERMITED IM MANY OTHER JURISDICTIONS

Montana is currently literally surrounded by states and canadian provinces that allow longer combination vehicles as proposed in SB187. 12 states and 4 provinces allow the operation of these combinations. (See Exhibit 4)

ADVANTAGES OF THIS TYPE VEHICLE CONFIGURATION

(1) More productive by 50% when compared to doubles
. One truck tractor replaces two truck tractors
. Saves freight costs for suppliers

(2) Fuel efficient
.Reduces fuel consumption as much as 27%

(3) Braking ability/stability
.Superior to other combinations

(4) Off-tracking on turns
.More maneuverable. Corners better than the standard 55 foot tractor semi.

(5) Bridges and pavements
.Easier on bridges and pavements. Because of number of axles, each carries less weight.

(6) Safety
.Best safety record of any heavy truck unit configuration.

(7) Splash and spray
.Tests indicate triples with their single axles create less spray than tractor-semis with tandem axles.

ANSWERS TO CRITICISMS

(1) Passing and climbing hills
.Ability to pass and climb hills is determined by weight, traction and horsepower of the pulling unit. High horsepower units are assigned to triples.

(2) Backing up
.It is difficult to back triples but the skilled drivers handle such units sufficiently to maneuver around obstacles and not become obstacles themselves.

SAFETY

ndustry testing began in the 1960's and continues today as part of an on-going program for the development of safety, compatible and fuel efficient longer combinations.

Vehicles have been tested for dynamic stability in all types of weather. Computer studies have verified the road tests showing that the dynamic and braking stability of articulated vehicles. The reason for this stability these combinations have more tires interfacing with the road. The standard tractor-semi has 18 tires. Triple trailer combinations have 26.

Montana Pioneered the testing of expanded truck combinations, particularly triples, in 1966-1967 and again in 1968. A million miles of operation was logged during this period with only one accident reported.

In 1979, during the diesel fuel crunch, the Highway Department issued permission to operate triples for 120 days to save fuel. Some 96,000 gallons were saved, 27% less fuel was used by triples vs. doubles making 2700 round trips, logging 1,028,768 miles. Not a single accident nor any negative incident involving triples was reported to the Department during the period. A winter testing program from Great Falls to Pocatello was conducted by Garrett for six weeks in February and March.

All together, actual operations of triples in Montana have logged over 2 million miles with one lone accident in 1968 for record of one-half accident per million miles. A phenomenal safety record.

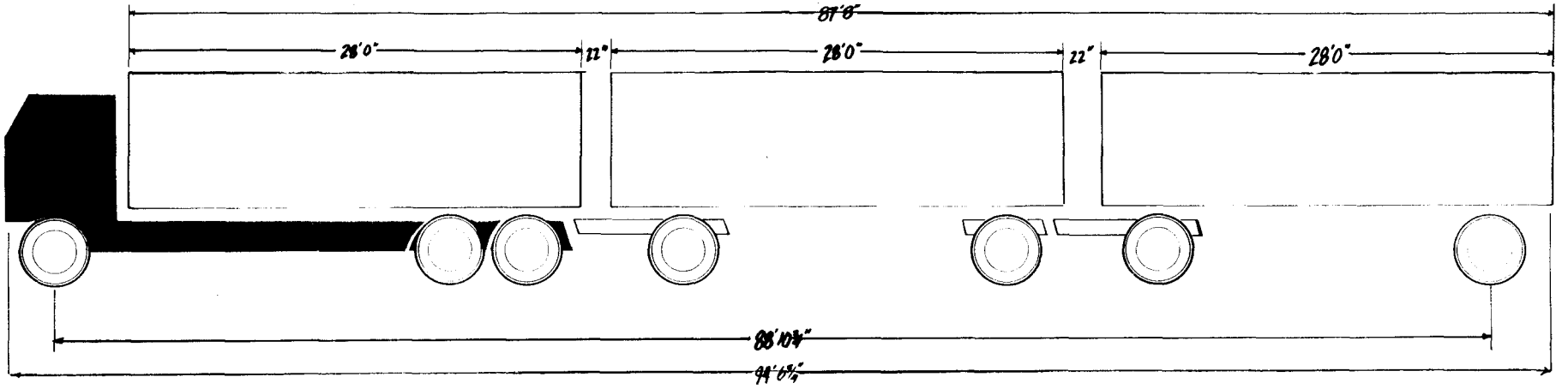
BRAKING

Braking tests of the combinations on a rainslick highway showed how their dynamic stability contributes to their superior braking performance. The squeegee effect of the leading tires creates an almost dry pavement for the following tires. This improved traction means improved braking performance. Braking tests have been done for many different groups, in different states and with different equipment. They have all led to the same conclusion: Triples combinations brake better than tractor-semis.

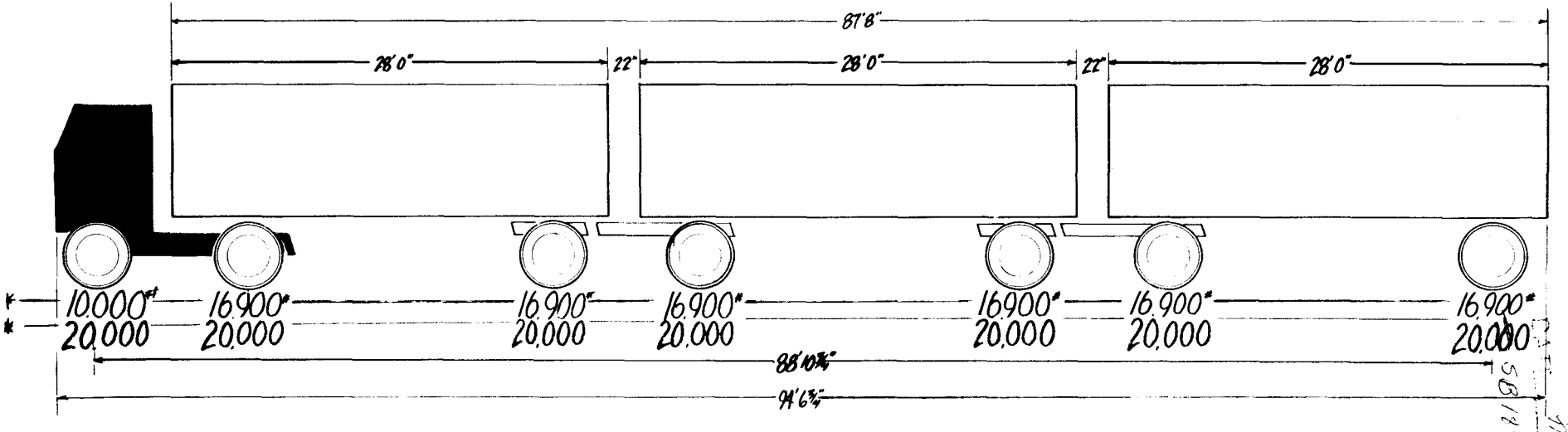
CONCLUSION

More productivity, an asset to Montana's economic development efforts, better braking and handling in turns, less wear and tear on highways and bridges, and good safety record - - - the operating characteristics of this combination show they are safe and compatible with other hgihway users. The bill should be passed.

BGH/sh



TRUCK WITH 28' BOX AND TWO 28' TRAILERS CAN CURRENTLY OPERATE ON ALL MONTANA HIGHWAYS UNDER SPECIAL PERMIT



TRUCK-TRACTOR WITH THREE 28' TRAILERS ARE PRECLUDED BY STATUTE FROM OPERATING IN MONTANA MAXIMUM GROSS WEIGHT 111,400#

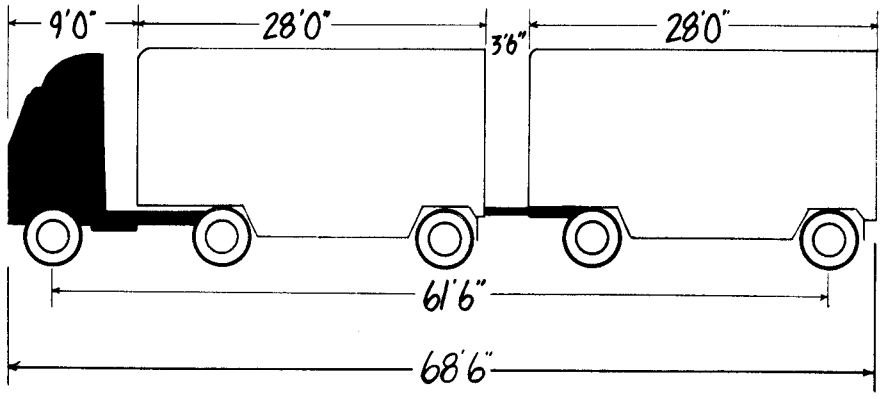
* MAXIMUM WEIGHT PER AXLE ALLOWED UNDER FORMULA B

* MAXIMUM WEIGHT PER AXLE ALLOWED

EXHIBIT 1
DATE 1/17/97
SB 127 - Sen Bill Farrell

Exhibit 1

UNITED PARCEL COMBINATION EXAMPLE



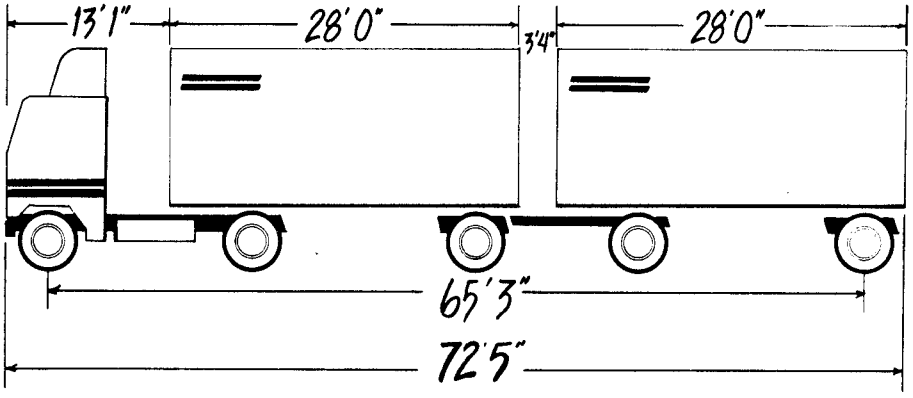
ANNUAL GROSS WEIGHT FEES
80,000 lbs
$1,718.50

10,000	17,500	17,500	17,500	17,500

TOTAL UNITED PARCEL DECLARED GROSS WEIGHT = 80,000 lbs.

TOTAL ALLOWABLE GROSS WEIGHT = 86,750 lbs.

CONSOLIDATED FREIGHTWAYS EXAMPLE



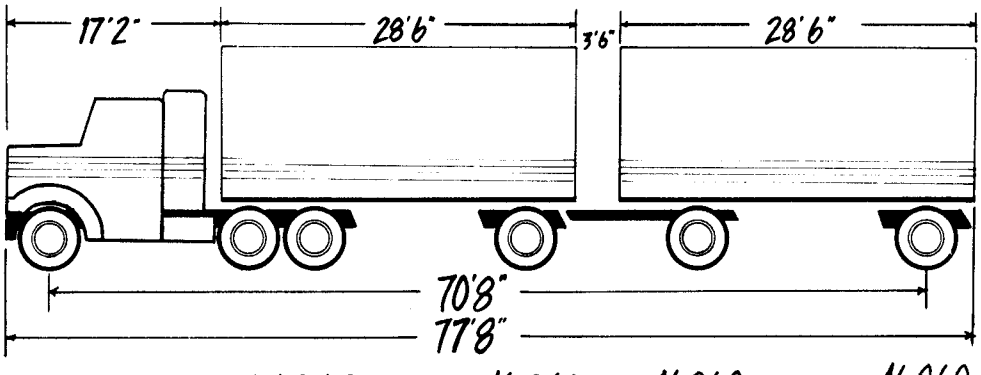
ANNUAL GROSS WEIGHT FEES
80,000 lbs.
$1718.50

10,000	17,500	17,500	17,500	17,500

TOTAL CF DECLARED GROSS WEIGHT = 80,000 lbs.

TOTAL ALLOWABLE GROSS WEIGHT = 88,620 lbs.

CONVENTIONAL TRACTOR WITH SLEEPER EXAMPLE

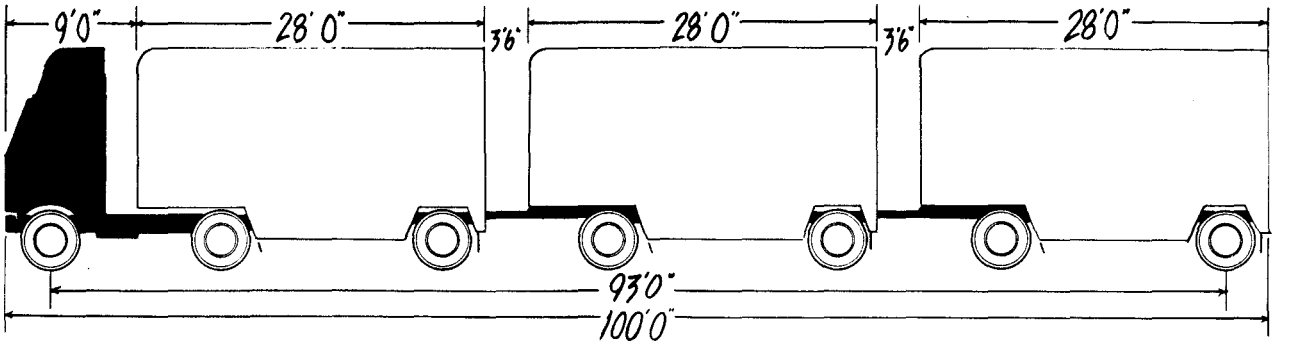


ANNUAL GROSS WEIGHT FEES
98,000 lbs.
$2308.00

12,000	34,000	16,860	16,860	16,860

TOTAL ALLOWABLE GROSS WEIGHT = 96,600 lbs.

UNITED PARCEL COMBINATION EXAMPLE

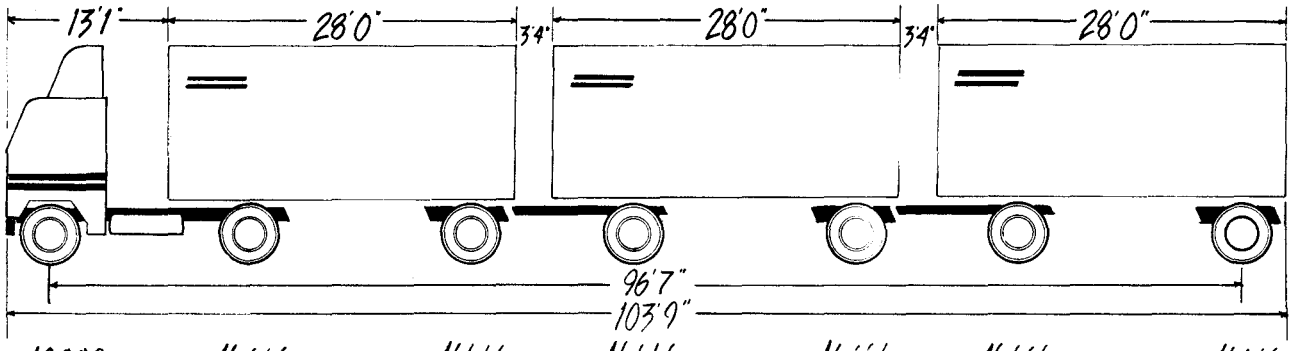


UNITED PARCEL DECLARED GROSS WEIGHT = 98,000 lbs.

TOTAL ALLOWABLE GROSS WEIGHT = 114,250 lbs.

ANNUAL GROSS WEIGHT FEES - 98,000 lbs. =	$2308.00
TERM RESTRICTED ROUTE PERMIT =	100.00
TERM SPECIAL OVERLENGTH PERMIT =	200.00
	$2,608.00

CONSOLIDATED FREIGHTWAYS EXAMPLE

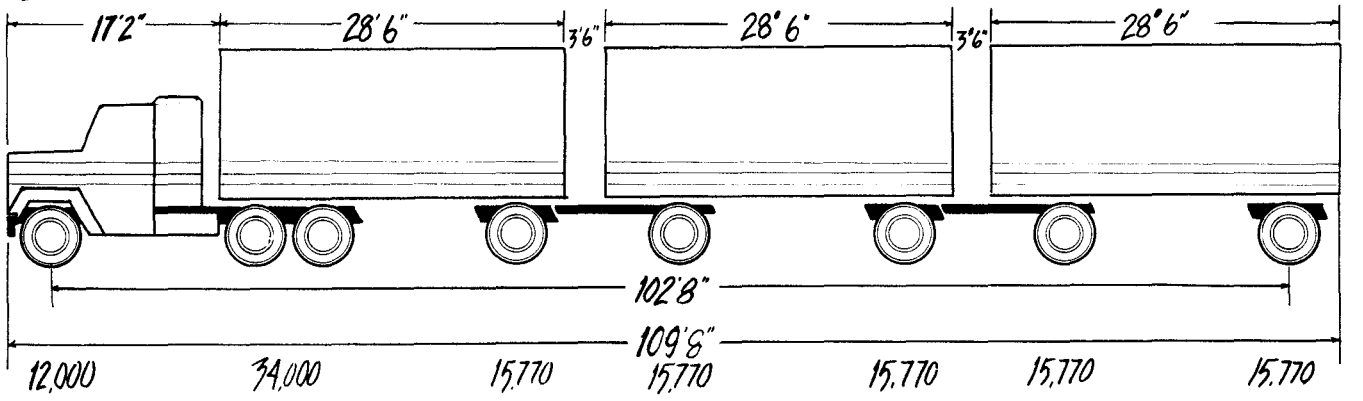


CF DECLARED GROSS WEIGHT = 110,000 lbs.

TOTAL ALLOWABLE GROSS WEIGHT = 116,580 lbs.

ANNUAL GROSS WEIGHT FEES - 110,000 lbs. =	$2,701.00
TERM RESTRICTED ROUTE PERMIT =	100.00
TERM SPECIAL OVERWEIGHT PERMIT =	200.00
	$3,001.00

CONVENTIONAL TRACTOR WITH SLEEPER EXAMPLE



TOTAL ALLOWABLE GROSS WEIGHT = 124,850 lbs.

ANNUAL GROSS WEIGHT FEES - 126,000 lbs. =	$3,225.00
TERM RESTRICTED ROUTE PERMIT =	100.00
TERM SPECIAL OVERWEIGHT PERMIT =	200.00
	$3,525.00

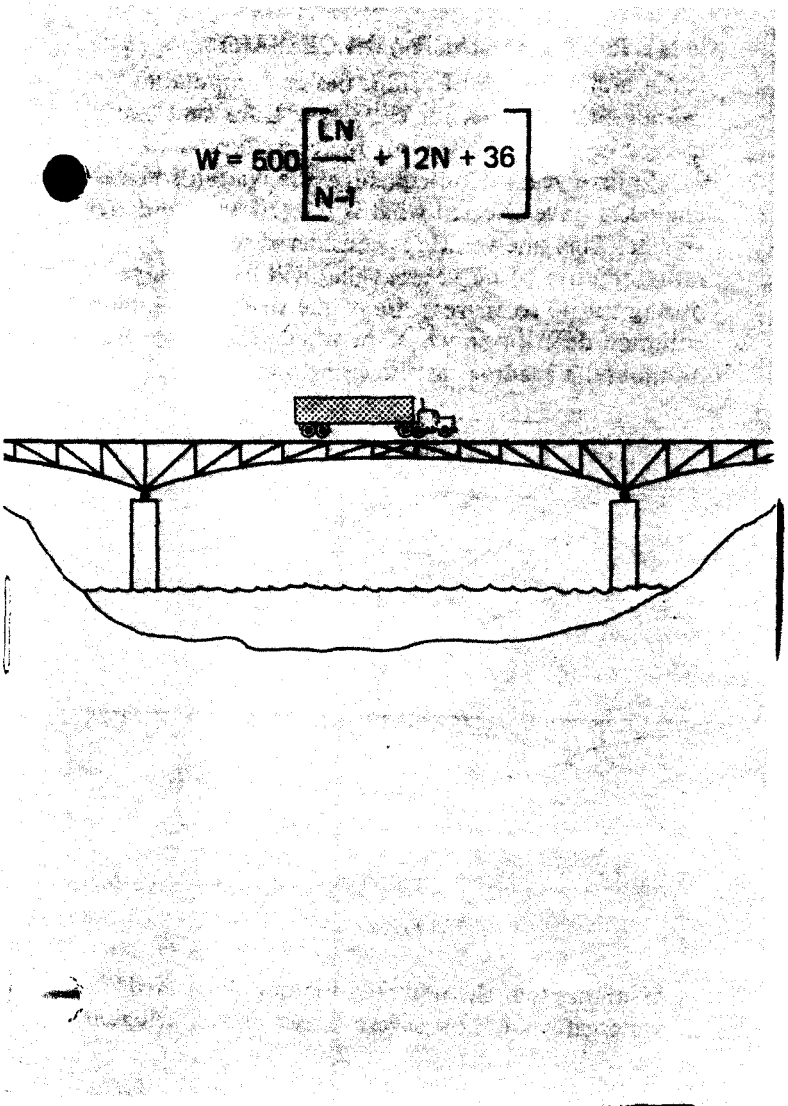

WESTERN STATES and PROVINCES ALLOWING TRIPLE TRAILERS
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
WASHINGTON
MONTANA
NORTH DAKOTA
OREGON
IDAHO
WYOMING*
* TESTING BASIS ON INTERSTATE SYSTEM
SOUTH DAKOTA
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
TURNPIKE
CALIFORNIA
ARIZONA
NEW MEXICO
OKLAHOMA
TEXAS
STATES and PROVINCES ALLOWING TRIPLES
ALSO INDIANA TURNPIKE and QUEBEC

BRIDGE GROSS WEIGHT FORMULA

EXHIBIT 4

US Department
of Transportation
Federal Highway Administration

March 1982



NOTE—for additional copies contact:
Federal Highway Administration
Office of Traffic Operations, HTO-22
400 7th St., S.W.; Rm. 3103D
Washington, D.C. 20590
(202) 426-1993

HTO-30/5-81(30M)
HTO-33/Rev. 3-82(40M)
HTO-22/R8-82(30M)

C.V.W. FORM 301 - Rev. 7/83

GROSS VEHICLE WEIGHT SCALE - RESTRICTED ROUTE - DAILY PERMIT

Effective October 1, 1983

Computed to nearest "0" by the formula in Section 61-10-107, M.C.A.

Formula W = 500 (LN/N minus 1 plus 12N plus 36) in which W = Gross Weight, L = Wheel Base in Feet, and N = Number of Axles. The Formula provides for maximum gross weight allowed on any vehicle or combination of vehicles and maximum gross weight for any group of axles. No tandem axle to exceed 34,000 pounds. No single axle to exceed 20,000 pounds.

MAXIMUM STATUTORY DIMENSIONS:

Width - 8 feet 6 inches
Height - 13 feet 6 inches
Length - 75 feet for all combinations of vehicles.

The Distance Between First and Last Axles in any group of axles, vehicle, or combination of vehicles	2 AXLES	3 AXLES	4 AXLES	5 AXLES	6 AXLES	7 AXLES	8 AXLES	9 AXLES
4	34,000							
5	34,000							
6	34,000							
7	34,000							
8	34,000	42,000						
9	39,000	42,750						
10	40,000	43,500						
11		44,250						
12		45,000	50,000					
13		45,750	50,660					
14		46,500	51,330					
15		47,250	52,000					
16		48,000	52,660	58,000				
17		48,750	53,330	58,620				
18		49,500	54,000	59,250				
19		50,250	54,660	59,870				
20		51,000	55,330	60,500	66,000			
21		51,750	56,000	61,120	66,600			
22		52,500	56,660	61,750	67,200			
23		53,250	57,330	62,370	67,800			
24		54,000	58,000	63,000	68,400	74,000		
25		54,750	58,660	63,620	69,000	74,580		
26		55,500	59,330	64,250	69,600	75,160		
27		56,250	60,000	64,870	70,200	75,750		
28		57,000	60,660	65,500	70,800	76,330	82,000	
29		57,750	61,330	66,120	71,400	76,910	82,570	
30		58,500	62,000	66,750	72,000	77,500	83,140	
31		59,250	62,660	67,370	72,600	78,080	83,710	
32		60,000	63,330	68,000	73,200	78,660	84,280	90,000
33			64,000	68,620	73,800	79,250	84,850	90,560
34			64,660	69,250	74,400	79,830	85,420	91,120
35			65,330	69,870	75,000	80,410	86,000	91,680
36			68,000	70,500	75,600	81,000	86,570	92,250
37			68,000	71,120	76,200	81,580	87,140	92,810
38			68,000	71,750	76,800	82,160	87,710	93,370
39			68,000	72,370	77,400	82,750	88,280	93,930
40			68,660	73,0	78,000	83,330	88,850	94,500
41			69,330	73,	78,600	83,910	89,420	95,060
42			70,000	74,2	79,200	84,500	90,000	95,620
43			70,660	74,870	79,800	85,080	90,570	96,180
44			71,330	75,500	80,400	85,660	91,140	96,750
45			72,000	76,120	81,000	86,250	91,710	97,310
46			72,660	76,750	81,600	86,830	92,280	97,870
47			73,330	77,370	82,200	87,410	92,850	98,430
48			74,000	78,000	82,800	88,000	93,420	99,000
49			74,660	78,620	83,400	88,580	94,000	99,560
50			75,330	79,250	84,000	89,160	94,570	100,120
51			76,000	79,870	84,600	89,750	95,140	100,680
52			76,660	80,500	85,200	90,330	95,710	101,250
53			77,330	81,120	85,800	90,910	96,280	101,810
54			78,000	81,750	86,400	91,500	96,850	102,370
55			78,660	82,370	87,000	92,080	97,420	102,930
56			79,330	83,000	87,600	92,660	98,000	103,500
57			80,000	83,620	88,200	93,250	98,570	104,060
58				84,250	88,800	93,830	99,140	104,620
59				84,870	89,400	94,410	99,710	105,180
60				85,500	90,000	95,000	100,280	105,750
61				86,120	90,600	95,580	100,850	106,310
62				86,750	91,200	96,160	101,420	106,870
63				87,370	91,800	96,750	102,000	107,430
64				88,000	92,400	97,330	102,570	108,000
65				88,620	93,000	97,910	103,140	108,560
66				89,250	93,600	98,500	103,710	109,120
67				89,870	94,200	99,080	104,280	109,680
68				90,500	94,800	99,660	104,850	110,250
69				91,120	95,400	100,250	105,420	110,810
70				91,750	96,000	100,830	106,000	111,370
71				92,370	96,600	101,410	106,570	111,930
72				93,000	97,200	102,000	107,140	112,500
73				93,620	97,800	102,580	107,710	113,060
74				94,250	98,400	103,160	108,280	113,620
75				94,870	99,000	103,750	108,850	114,180
76				95,500	99,600	104,330	109,420	114,750
77				96,120	100,200	104,910	110,000	115,310
78				96,750	100,800	105,500	110,570	115,870
79				97,370	101,400	106,080	111,140	116,430
80				98,000	102,000	106,660	111,710	117,000
81				98,620	102,600	107,250	112,280	117,560
82				99,250	103,200	107,830	112,850	118,120
83				99,870	103,800	108,410	113,420	118,680
84					104,400	109,000	114,000	119,250
85					105,000	109,580	114,570	119,810
86					105,600	110,160	115,140	120,370
87					106,200	110,750	115,710	120,930
88					106,800	111,330	116,280	121,500
89					107,400	111,910	116,850	122,060
90					108,000	112,500	117,420	122,620
91					108,600	113,080	118,000	123,180

SEE REVERSE SIDE

W O R K I N G D R A F T

Rules and Regulations Governing the Operation of Triple Trailer Combinations in Montana.

Legal Authority for Operation:

Triple trailer combinations may be operated in the State of Montana in accordance with the following legal provisions:

In accordance with the above, the Montana Highway Department has issued the following rules and regulations for the operation of such vehicles:

1. General:

No triple trailer combination can be operated unless it is covered by a valid oversize permit issued to the operating company. For operations at gross weights in excess of 80,000 pounds, the operating company must also hold an annual overweight permit and must pay the additional registration fees up to its new declared gross combination weight. Each oversize permit for the operation of triple trailer combinations shall be valid for a calendar year and cost $200.00 (two hundred dollars), prorated monthly if issued for less than a year. Originals of the oversize and the overweight permits must be carried in the truck or truck tractor of each combination.

Any oversize permit may be revoked by the Montana Highway Department for failure of the Company or any of its drivers to comply with any rule and regulation contained herein. In addition to the rules and regulations, all equipment operated, all drivers employed and all operating procedures used must comply with the latest Motor Carrier Safety Regulations, Parts 390 - 397 of the U.S. Department of Transportation, Federal Highway Administration, except where the rules and regulations contain special conditions more stringent than or not in conflict with said Motor Carrier Safety Regulations.

Any Company approved to operate triple trailer combinations under an oversize permit must provide the Montana Highway Department with such reports and data on accidents, operational costs, safety inspections, equipment, maintenance, and other item which may be required.

No oversize permit will be issued to any Company which does not have a documented, established and aggressive safety program, which includes a documented driver training and certification program.

Triple trailer combinations operating under an oversize permit shall travel only on those highways designated by the Montana Highway Department. The Montana Highway Department may restrict or prohibit operation during times or periods when adverse conditions, traffic, weather, or other safety considerations make such operation unsafe or inadvisable.

As required by 49 CFR 1, par. 177.835(c), transportation of Class A explosives is prohibited. This prohibition is not intended to include the transportation of gasoline, fuel oil, or heating oil, or other such petroleum products.

2. Equipment:

In addition to Section 1 above, the following rules and regulations will apply:

a. Power

All trucks and tractor trucks shall be powered to provide adequate acceleration ability and hill climbing ability under normal operating conditions, and to operate on level grades at speeds compatible with other traffic. The ability to maintain a minimum speed of 20 mph under normal operating conditions on any grade over which the combination is operated is required.

b. Traction

All trucks and truck tractors shall have adequate traction to maintain a minimum speed of 20 mph under normal operating conditions on any grade over which the combination is operated and to be able to resume a speed of 20 mph after stopping on any such grade and, except in extreme road or weather conditions, to negotiate at any speed all grades encountered.

c. Tires

Each individual single and tandem axle must have tires of the same size and construction (radial or non-radial). Tires must be properly inflated for the load being carried.

d. Fifth Wheel

All fifth wheels must be clean and lubricated with a light duty grease. The fifth wheel must be located in a position which provides adequate stability.

e. Pick-up Plates

Pick-up plates must be of equal strength to the fifth wheel.

f. King Pin

The king pin must be of a solid type and permanently fastened. Screw out or folding type king pins are prohibited.

g. Pintle Hook and Eye

All hitch connections must be of a no-slack type, preferably air actuated ram. Air actuated hitches which are isolated from the primary air transmission system are required.

h. Drawbar

The drawbar length should be the practical minimum consistent with weight distribution and clearances required between trailers for turning and backing maneuvers.

i. Axles

Permanently attached trailer axles must be those designed for the width of the body.

j. Brakes

All braking systems must comply with state and federal requirements. In addition, fast air transmission and release valves must be provided for all trailers, semitrailers and converter dollies. A brake force proportioning valve may be provided on the steering axle. Indiscriminate use of engine retarder brakes is prohibited.

k. Mud Flaps or Splash Guards

Anti-sail type mud flaps are required.

3. Combination Description:

A triple trailer combination is a tractor truck, semitrailer and two trailers, which have an overall combination length not to exceed 105 feet with a cabover tractor or 110 feet with a conventional tractor. A semitrailer used with a converter dolly is considered to be a trailer. Semitrailers and trailers must be approximately equal length and not exceed 28 1/2 feet in length each, 13 1/2 feet in height or 102 inches in width.

4. Drivers:

a. A driver of a triple trailer combination must be experienced in driving tractor-trailer combinations and maintain a good driving record.

b. The driver must fully comply with the driver's requirements set forth in the Motor Carrier Safety Regulations of the U.S. Department of Transportation.

c. The driver must have had documented special instruction and training in the operation of triple trailer combinations prior to operating any such combination on a highway.

d. The driver must be under the control and supervision of the company holding the oversize permit.

e. Any wilful violation of the requirements of this section may result in revocation of the Company's oversize permit.

5. Speed:

The maximum speed for any triple trailer combination under an oversize permit shall not exceed the legally posted limit.

6. Stability:

All triple trailer combinations must be stable at all times during normal braking and normal operation. A triple trailer combination when travelling on a level, smooth, paved surface must follow in the path of the towing vehicle without shifting or swerving more than three inches to either side when the towing vehicle is moving in a straight line.

7. Weight:

The total weight on any single axle shall not exceed 20,000 pounds. The total weight on any tandem axle shall not exceed 34,000 pounds. The total weight on any group of two or more consecutive axles shall not exceed the amount provided by federal Bridge Formula 'B'.

8. Load Sequence:

In no case shall any trailer or semitrailer be placed ahead of another trailer or semitrailer which carries an appreciably heavier load. The heaviest trailer or semitrailer should be placed in front and the lightest at the rear. An empty trailer or semitrailer must not precede a loaded trailer or semitrailer.

9. Operational Procedures:

A minimum distance of 100 feet for every 10 miles per hour speed shall be maintained between a triple trailer combination and other vehicles except when overtaking and passing.

A triple trailer combination is not allowed in the farthest lefthand lane except when passing another vehicle travelling in the same direction, when emergency conditions exist or where otherwise posted.

In the event a triple trailer combination is disabled for any reason other than an accident, it should be parked as far off the travelled way as possible.

10. Accidents:

Notwithstanding other state and federal requirements for reporting motor vehicle accidents, all U.S. DOT reportable accidents involving a triple trailer combination operated under a special transportation permit must be reported to the Montana Highway Department within 10 days of the date of the accident.

11. Insurance:

Every triple trailer combination operated under an oversize permit shall be covered by insurance of not less than $750,000 public liability and $50,000 property damage. In any case, coverage must meet or exceed the applicable state or federal standard, whichever is higher.

BEFORE THE
MONTANA HOUSE HIGHWAY AND TRANSPORTATION COMMITTEE
SENATE BILL 187
TESTIMONY OF WARREN E. HOEMANN
DIRECTOR OF STATE GOVERNMENT RELATIONS
YELLOW FREIGHT SYSTEM, INC.

My name is Warren E. Hoemann. I am Director of State Government Relations for Yellow Freight System. I am appearing here today in support of SB 187, the authorization of triple trailer combinations on the Interstate highways in Montana.

Yellow is a nationwide less than truckload (LTL) motor carrier, operating in 49 states in interstate commerce. Yellow is also a relative newcomer to Montana, having begun regular operations here only in the last 18 months. So far Yellow has 5 facilities in Montana, at Billings, Butte, Great Falls, Bozeman and Missoula. At these facilities Yellow currently employs 9 people whose salaries contribute almost a quarter million dollars to the state economy. Yellow provides direct inbound and outbound service from 60 Montana communities to over 30,000 communities nationwide.

Yellow came to Montana because we see a tremendous potential for growth here. Despite recent economic downturns in the state, we see Montana and the entire Intermountain West in a position to move to a more diversified economy and attract new business and new revenue bases. We want to be a part of that growth.

That is why Yellow is supporting SB 187. We see the authorization of triple trailer combinations on the Interstate highways in Montana as a signal by the state that it welcomes new business.

Studies have shown that the availability of good transportation ranks second only to the availability of a labor pool among the factors businesses use to determine new locations. By approving SB 187, Montana would not only send a signal that new business is welcome in the state, but it would also help to reduce the transportation disadvantage the state faces in establishing a more diversified economy. I know these figures will sound familiar to many of you, but I think they bear repeating. A few years ago the Governor's Task Force made a study of Montana's transportation needs and discovered some interesting facts about the relative disadvantage Montana faces in highway transportation. For example, in Montana there is one mile of highway for every 1.93 square miles of land or 9.5 people. In the Northeast, on the other hand, that one mile of highway serves only .7 square miles of land but reaches 184 people. Montana ranks 48th in population density at 5.1 people per square mile, compared to California at 135.5, Pennsylvania at 263 and Illinois at 199.9. In Montana the cost of each truck is spread over only 3.5 persons, as compared to 15.8 persons in the Northeast. As a result of all these figures, a truck in Montana has to travel 30 times as far to reach the same number of people. In other words, there are fewer people in Montana to support each mile

of highway and to bear the costs of the trucks that have to travel those miles in serving the needs of the state.

To make Montana more attractive for business the transportation disadvantage of long distances and low population must be overcome. The state has already taken that progressive step for its extractive industries. As the Governor's Task Force found, the issuance of special permits for vehicles operating over 80,000 pounds gross weight is currently saving the state of Montana and its people over $200 million annually in transportation charges compared to operations at 80,000 pounds by the typical 5-axle tractor-semitrailer. SB 187 would build upon that record of productivity by allowing the operation of a truck combination that is particularly efficient in the movement of general commodities. With SB 187 in place, Montana could truly offer all types of business a productive highway transport system.

Other western states have faced similar transportation problems. The long distances, low population and the lack of alternative forms of transportation have lead these states to the more productive truck combinations like triples. Today, 9 states, 4 Canadian provinces and the Kansas Turnpike allow the operation of triple trailer combinations under special permit. Your neighboring states of Idaho, Oregon, Nevada and Utah have allowed triples on a permanent basis since the late 1960's. In those almost 20 years triples have accumulated an enviable record of safety. In Yellow's particular instance, we operate triples in Idaho, Oregon, Nevada, Utah and on the Kansas Turnpike. In 6.4 million miles of triples operations since 1984, Yellow had had only two minor accidents for an accident frequency that is 40% lower than that of our entire fleet.

This fine safety record is the product of three elements: the good operating characteristics of triples, the state rules and regulations under which they operate, and their operation on better highways by better qualified drivers. Let me mention just a few of the desirable characteristics of triples. Triples are more maneuverable than many of the truck combinations already operated on the highways of Montana. For example, compared to a 45-28 Rocky Mountain Double currently legal in Montana, a set of 28-foot triples will turn tighter on an Interstate highway ramp by about 1 foot. Triples will even turn tighter than the federally-mandated 48-foot semitrailers.

Because of the squeegee effect of the first tires clearing a dry path for the following tires, a set of triples will have less pronounced splash and spray on wet pavements than the common tractor-semitrailer. Triples have less effect on pavements and bridges than do 28-foot doubles. Even when loaded to 112,500 pounds under the federal bridge formula, a set of 28-foot triples will still have less than 17,000 pounds on any single axle, compared to the 20,000 pounds on the single axle of a set of doubles at only 80,000 pounds gross weight. At 105,000 pounds, a more common weight

for LTL carriers, the single axles on a set of triples will be reduced to between 15,000 and 16,000 pounds.

Triples have more braking capability than do most truck combinations. This is because braking is related to the weight carried by each axle, not to the combination gross weight. With the reduced axle weights noted above, triples have less energy to be dissipated at each brake. With the increased number of brakes and increased number of tires meeting the highways, triples braking is actually improved. Finally, triples are 40% to 45% more fuel efficient than tractor-semis and about 27% better than the typical 28-foot doubles combination.

I mentioned the benefit of state rules and regulations governing the operation of triples. Every state which allows triples allows them only under special permit and only if they abide by rules and regulations that are above and beyond those required for most other truck combinations. The same would be true in Montana. SB 187 provides rule making authority for the Montana Highway Department. The motor carriers, like Yellow, who are interested in the operation of triples in Montana have in hand proposed rules and regulations that govern driver training, company safety programs, equipment requirements, operational procedures and insurance levels. Any violation of these proposed rules and regulations could result in a cancellation of the motor carrier's permit to operate triples, which would serve as a significant economic incentive for carriers to abide by the rules. Included among the proposed rules is authority for the Montana Highway Department to restrict or prohibit operation during inclement weather and for a minimum speed on grades to eliminate those vehicles which cannot operate in a manner compatible with other traffic. The rules and regulations proposed for Montana are patterned after the model rules and regulations being developed by the Multistate Highway Transportation Agreement, a regional transportation forum of 10 contiguous western states of which Montana is a member.

A final word again on what Yellow sees for the future. If SB 187 is approved, Yellow would begin occasional operation of triple trailer combinations between our 5 facilities in Montana and our hub at Salt Lake City, Utah. The use of triples would allow great flexibility to Yellow in dropping and picking up single trailers at each of our Montana sites. Our operation of triples in Montana would become more frequent as freight volume grows, and we think SB 187 is a significant step in encouraging that growth in business. Eventually we can foresee the day when Montana could become a logical site for warehousing and distribution along the I-90, I-94 corridor. North and South Dakota, on Montana's east, and Idaho and Oregon, on Montana's west, already allow the operation of triple trailer combinations. With their authorization in Montana, we see a natural flow of freight between Chicago and the Twin Cities, on the one hand, and the Northwest on the other. Montana lies astride that corridor and, similarly, astride an opportunity. I hope you will take that opportunity.

STATE OF COLORADO

DEPARTMENT OF HIGHWAYS

4201 East Arkansas Ave.
Denver, Colorado 80222
(303) 757-9011

Mr. Donn Mc Morris
Northwest Transport Service, Inc.
5601 Holly Street
Commerce City, Colorado 80022

Dear Mr. Mc Morris:

Following your inquiry regarding the accident history of longer vehicle combinations (LVC) in Colorado, I reviewed our department records. Our records begin with the introduction of LVC in July of 1981 when the test of LVC was undertaken following the passage of Senate Bill No. 445.

Ray C. Erickson, Robert L. Hayden and I were responsible for conducting the one year test study and preparing the report to the Colorado General Assembly. I have enclosed a copy of that report for reference and review.

Page 17 of that report reflects that there were no accidents involving LVC during the one year study in which 1,622,818 miles were logged by the ten participating companies. After the test was completed and following the report which was written in January of 1983, Joe Dolan, the Executive Director of the Dept. of Highways, directed the Colorado State Patrol to monitor all truck accidents for accidents involving LVC. In the summer of 1985 I reviewed the truck accident file developed by the State Patrol in response to this directive. There were no accidents involving LVC in Colorado through the summer of 1985. I have asked the State Patrol to advise me of the LVC accident status since July of 1985. I haven't received an answer at this writing.

The LVC rules, 2CCR 601-9, Sec. 10-3, requires that all accidents involving LVC operated under a permit shall be reported by the permit holder to the permit agency within ten calendar days of the date of the accident. Staff Maintenance is the permitting agency within the Dept. of Highways. I checked their records and they reflect that there have been no accidents involving LVC since July of 1981 when LVC's were first permitted in Colorado. There are presently 28 companies permitted for LVC in Colorado. While the mileage they log is unknown, it is safe to assume that the annual miles logged would substantially exceed the 1,622,818 miles logged during the test when the number of companies permitted was limited as was the number of trips permitted by those companies.

You have a fine record of no-hits going, Donn. Keep up the good work.

Sincerely yours,

David I. Dickey

David I. Dickey

DID/do

Figure 1 - Partial list of reports issued by state highway agencies relative to longer combination tests.

1. Observation on the Turning Characteristics of Western Type Trucks and Combinations, California Division of Highways, 1950.

2. Triple Trailer Study in California, California Department of Public Works in cooperation with Department of Highway Patrol, 1972.

3. Highway Operations with Truck Trailer Double and Triple Units, State of Idaho Department of Highways, 1964.

4. Test Program of Truck Combinations Exceeding 70 Feet, State of Nevada Highway Department, 1968.

5. Longer Multiple Trailer Combination Study, Progress Report, Planning Research Section, New Mexico State Highway Department, 1978.

6. Report of Test Runs, Mt. Hood Highway, G. Webb Ross, Director of Permits, Oregon State Highway Department, 1969.

7. Triple Trailer Evaluation in Utah, Research and Evaluation Unit, Utah Department of Transportation, 1975.

8. Report on 90 Day Test Operation of Longer Combinations, M. G. Oldfield, Director of Permits, Washington Department of Highways, 1969.

9. Report of Experimental Multiple Unit Trailer Combination Operation Tests, Wyoming State Highway Department, 1974.

10. Report on the Testing of Triple Trailer Combinations in Alberta, Alberta Department of Highways and Transport, 1970.

11. Longer Multiple Trailer Combinations Study, Final Report, Planning Bureau, New Mexico State Highway Department, 1982.

12. A Study of Longer Vehicle Combinations, Colorado State Department of Highways, 1983.

Table 8-15 - Chronological summary of various technical tests of the braking performance of longer multiple trailer combinations.

Date	Conducted by	Test Location	Vehicle Type	Length	GCW (lbs)	Speed (mph)	Stopping Distance				Braking Stability
							Dry Surface		Wet Surface		
							Loaded	Empty	Loaded	Empty	
[1] 2/65	Utah Highway Patrol Nevada Highway Dept. Utah Motor Transport Assn. Insured Transporters, Inc.	Salt Lake City, UT to Verdi, NV	Autotransporter truck and two stinger steered semitrailers	104' "	73,400 48,860	20½ 20	36'6"	 30'	NT	 NT	Good Good
[1] 9/66	Indiana Toll Road Ohio Turnpike Great Lakes Express	Indiana Toll Road Ohio Turnpike	Triples	93'6"	85,200	20	21'5"		NT		Good
[1]1/67	Pacific Intermountain Express Western Highway Institute	Los Angeles, CA	Triples " " " " " " " " " " " " "	94'5" " " " " " " " " " " " "	36,300 36,300 57,580 57,580 81,880 101,020 101,020 101,020 82,180 82,180 82,180 81,520 58,140 58,140 58,220 58,220	20 20 20 25 24 23½ 30 25 34 20 20 25 26½ 22 26 23	 33' 42' 38' 46' 62' 56' 72' 41' 39' 46' 56' 35' 45' 34'	32' 30'			All stops were made in a stable condition well within a 12-foot lane.
[1]2/67	Pacific Intermountain Express Western Highway Institute	Garden Grove Freeway Los Angeles, CA	Triples "	95' 95'	89,635 89,635	20 50	37' [2]126'				All stops in stable condition and well within 12-foot lane.
5/67-8/67	Western Highway Institute Truck Trailer Mfr. Assn. American Trucking Assns.	Ford Test Track Utica, MI	Turnpike Dbls. " " " " " " " " " " Triples " " "	105' " " " " " " " " " " 95' " " "	82,950 82,950 100,950 100,950 114,250 114,250 114,250 81,450 81,450 81,450 81,450 81,450 81,450 81,350 81,350 117,850	20 50 20 50 20 50 35 20 20 50 50 35 35 20 50 35 20	[1] 27' [1]217' [1] 47' [1]232' [1] 44' [1]235' [3] 43 [3] 47 [3]183 [3]193 [1] 42 [1]255 [1] 36		[1] 54' [1]154' [3] 42 [3]152 [3]144 [1]122 [1] 36		The SAE paper on the Utica tests states in conclusion No. 5: "The tests also demonstrated that the longer combinations are stable during locked wheel stops and that the structural strength of existing equipment is adequate for use in longer combinations."

These exploratory tests were made to determine the braking stability of a triple trailer combination with empty, partially loaded and loaded trailers in various sequences in the combination. More complete data can be found in "Report on Longer Combinations Stability Tests," Western Highway Institute, 1/18/67.

The braking tests made at the Utica test track during a 3 month period in 1967 were the most comprehensive technical tests ever made of the braking characteristics of turnpike doubles and triple trailer combinations. All sequences of empty, half loaded and fully loaded trailers were tested on a dry surface at speeds of 20 and 50 mph and on wet surfaces at speeds of 20 and 35 mph.

An SAE paper "Optimum Braking Stability and Structural Integrity for Longer Truck Combinations" by Robert E. Nelson and James W. Fitch reports more fully on these tests.

Table 8-15 - continued

Date	Conducted by	Test Location	Vehicle Type	Length	GCW (lbs)	Speed (mph)	Stopping Distance				Braking Stability
							Dry Surface		Wet Surface		
							Loaded	Empty	Loaded	Empty	
12/71	United Parcel Service Eaton Corporation	Eaton Proving Grounds Marshall, MI	Triples "	93'6" "	38,000(est) 38,000 "	20 40		[1] 34'6" [1]113'2"		[1] 42'0" [1]152'5"	Triples performed better than bobtail tractors, tractor-semis and doubles. They were the only unit able to make a stable stop during a lane change on a low coefficient surface.
5/74- 6/74	Utah Department of Transportation Utah Highway Patrol	Burmester, UT	Tractor-semi " " " " " " Twin trailers " " " " " Triples " " " " " " " "	55' " " " " " " 65' " " " " " 95' " " " " " " " "	69,500 69,500 69,500 69,500 69,500 69,500 69,500 76,540 77,140 77,140 77,140 77,140 77,140 107,850 107,850 107,850 107,850 106,860 106,860 106,860 106,860 106,860 106,860	20 20 30 30 30 40 40 30 20 30 30 40 40 20 30 40 40 20 20 30 30 40 40	23.5' 17.9' 45.8' 58.9' 54.6' 55.9' 123.3' 60.5' 21.0' 64.3' 50.6' 88.0' 93.5' 69.0' 133.6' 129.0' 24.9' 27.1' 54.8' 60.2' 100.0' 92.4'		19.0' 55.1' 73.4' 23.9' 85.0' 83.8' 39.2' 85.3' 112.0' 104.9'		Utah's report "Triple Trailer Evaluation in Utah" states "In stopping on wet pavements, the triples were more stable than the doubles and the doubles were more stable than the singles. There was no observable difference in stability on dry pavements." The report further states: "--the single was not run at 40 mph on the wet surface. There was fear that this combination might jackknife.."
8/77	New Mexico Highway Dept. Planning Division New Mexico Highway Patrol	Albuquerque, NM	Triples Turnpike Dbls.	95'4" 104'4"	105,800 105,100	50 50	130' 123'		155' 153'		Both the triples and the turnpike doubles stopped in a straight line condition well within a 12-foot lane during both wet and dry stops.

[1] Standard "in-use" air brake systems.
[2] Distance measured from time brakes were applied on rearmost axle to point of complete stop.
[3] Modified braking system.
NT - not tested.

Figure 8-29 - Chronological development of productive sizes and weights in the Western region.

Arizona

1. Demonstration tests of a triples combination were made at International Harvester's test track near Phoenix in 1967.

2. Bill introduced in 1974 to permit operation of multiple trailer combinations not to exceed 105 feet in length and 105,500-pounds GCW. Railroad and auto club opposition. Highway department not opposed. Did not pass.

3. Multiple trailer legislation introduced in 1976 to permit operating of multiple trailer combinations not to exceed 105 feet in length and 105,500 pounds GCW. Amended to apply only to Interstate Highway No. 15, passed, effective June 1, 1976.

4. Truck brake heat tests conducted on U.S. 60, August 1978.

5. Legislation introduced in 1979 and again in 1980 to extend longer combination operations to all Interstate highways. Passed House. Bill referred to Rules Committee where it was held until adjournment of the legislature.

California

1. Offtracking study made in 1949 and updated in 1964.

2. Braking and stability tests on a triples combination conducted at PIE's Los Angeles terminal in 1967.

3. The braking and stability performance of a triples combination during a full brake stop from 50 mph was filmed near Los Angeles, February 1967.

4. Preparations for triple combination tests commenced in spring of 1971.

5. House Resolution #88 dated June 30, 1971, requesting that plans to test triple trailer combinations be abandoned was tabled.

6. House Resolution #118 dated August 11, 1971 requesting the Department of Public Works to conduct triple trailer tests was adopted.

7. Braking tests on September 29 and 30, 1971 showed that balanced brakes plus fast air transmission and release enabled truck combinations to meet FMVSS121 standards without antilock.

8. A demonstration and test of one triple trailer combination was conducted October 27 - November 5, 1971.

Figure 8-29 - continued

9. A six-month operational test of triples proposed in 1972.

10. Hearings held in March 1974 by Cal DOT to consider issuing permits for higher weights. Fuel conservation was stated to be the motivation for hearings.

11. Hearings held in January 1977 on proposal to authorize operation of more productive trucks.

12. Resolution introduced in 1979 to authorize operation of multiple trailer combinations not to exceed 98 feet in length and 98,000 pounds GCW on selected Interstate routes. Resolution based on need to conserve fuel.

13. Maneuverability demonstrations conducted in 1980 at Ontario for the San Bernadino Area Governments (SANBAG).

Colorado

1. In 1961, a sample study was conducted on the operating characteristics of trucks. This was mostly weight related.

2. Request made to Colorado Highway Department in September 1972 to allow the operation by permit of more productive truck combinations having an overall length of at least 90 feet and a gross weight of approximately 106,000 pounds. Request not approved.

3. Legislation approving 85,000 pounds GVW on non-Interstate highways approved effective July 1973.

4. House Bill No. 1355 to reduce the GVW allowed on non-Interstate highways from 85,000 to 80,000 pounds indefinitely postponed in committee.

5. Triples tests proposed by Colorado Highway Department in December 1977 and approved by Regional Office, USDOT in January 1978 were never conducted due to negative political pressures.

6. Legislation approved in 1979 to extend use of 85,000-pounds GVW to Interstate System was rescinded due to threat by USDOT to withhold Colorado's federal-aid highway funds.

Hawaii

1. Longer combination tests proposed by the Hawaii Trucking Association on June 30, 1967. No action taken.

Figure 8-29 - continued

2. Legislation introduced in 1976 increasing tandem axle weight to 36,000 pounds and gross weight to 92,000 pounds. Bill was withdrawn at request of HTA.

3. Legislation passed in 1977 provided 24,000-pound single axles, 34,000-pound tandem axles and 92,000 pound gross weights with some additional benefits allowed with economic justification.

Idaho

1. Tests were conducted in June 1964 on the hill climbing ability of a triples combination. Later that year more extensive tests were made on triples and double 40s.

2. Legislation approved effective November 1967 authorized the highway commission to designate highways for the operation of truck combinations not to exceed 98 feet and 105,500 pounds gross combination weight. Permits required on Interstate routes.

3. Regulations permitting operation of longer multiple trailer combinations issued June 27, 1968.

4. Legislation passed in 1972 included federal Bridge Table "B" which allows a maximum of 105,500 pounds gross weight on a 60-foot wheelbase.

5. Length limit for multiple trailers was increased from 98 feet to 105 feet in 1976 by act of the legislature.

6. Regulations allowing a truck-semitrailer combination with stinger steering to operate at a length of 75 feet were issued in 1977.

Montana

1. During the fall and winter of 1966-1967, operational tests were conducted on four longer multiple trailer configurations. Tests were made in all kinds of weather, load conditions and traffic densities. Most of the tests were made on two-lane highways.

2. A law was passed effective January 1, 1968 allowing trucks to operate by permit with a gross weight not to exceed 105,500 pounds. A measure to authorize an increase in length was defeated.

3. Further operational tests were authorized in 1968 but were discontinued due to Interstate highway restrictions.

4. On June 28, 1974, the Montana Supreme Court ruled that the Montana Highway Commission had authority to issue special permits for the

Figure 8-29 - continued

operating of reducible extra-dimensional and extra weight vehicles on the Interstate System.

5. At the request of five motor carriers including BN Transport, hearings were held on September 10 and 17, 1975, October 21, 1975 and July 14, 1976 on a proposal to authorize the operation of three cargo unit combinations at a maximum length of 110 feet on designated highways. The State Highway Commission decided against the proposal.

6. Operational tests on Interstate highways conducted June 25, 1979 through October 22, 1979.

7. Proposal by State Highway Department to adopt rules and regulations for movement of longer combinations on March 29, 1980 delayed by court action instigated by Montana Auto Club (AAA).

Nevada

1. Consolidated Freightways, in 1962, with the approval of the Nevada Highway Department, conducted some limited tests with a triple trailer combination.

2. In January 1965, again with the sanction of the Highway Department, CF tested the climbing, traction, stopping, and maneuverability characteristics of a triple trailer combination.

3. In February 1965, operational tests of an auto transporter were made between Salt Lake City, Utah and Verdi, Nevada by Insured Transporters which had previously engaged Brake Service Company of San Francisco, California to check the braking and stability of this configuration.

4. A law, effective July 1, 1967, required rules and regulations to be drawn up for the operation of 70 - 105-foot long truck combinations.

5. Statewide demonstration tests involving turnpike doubles, triple trailers, Rocky Mountain doubles and a truck and two trailers were conducted by the Nevada Highway Department in January 1968. Off-tracking, stability, traction, braking, climbing, and passing characteristics were studied along with effects on other highway traffic. The week long test involved mostly two-lane highways.

6. Following the demonstration tests of January 1968, continuing operational tests were conducted under temporary rules and regulations promulgated by the Nevada Highway Department. This test period ended on April 15, 1969 when a revised law amending the 1967 law was signed by the Governor which authorized regular operation under

Figure 8-29 - continued

new rules and regulations. Gross weights of 129,000 pounds were allowed. Single axle weights were set at 18,000 pounds and tandem axle weights at 32,000 pounds. A bridge table controlled the interior axle loads. Operation was authorized, with a few exceptions, on the entire state highway system.

7. Effective May 1980, single axle weights were increased to 20,000 pounds and tandem axles to 34,000 pounds; 45-foot semitrailers were approved in Rocky Mountain doubles combinations and gradeability standards changed to require not less than 20 mph on any grade.

New Mexico

1. A proposal to authorize operational tests on designated highways of vehicle combinations with not less than six but not more than nine axles and a total length not to exceed 105 feet was made in 1970. The combinations would be restricted to not more than three cargo units and a gross weight of 105,500 pounds. Railroad and AAA opposition were adequate to defeat the proposal.

2. In March 1977, a House Memorial relating to fuel conservation requested the State Highway Commission to study the operation of longer vehicle combinations. The memorial passed without a dissenting vote.

3. Demonstration tests involving turnpike doubles and twin trailers were conducted in Albuquerque on August 13, 1977. Operational tests were authorized to commence August 15, 1977.

4. The strength of two new Interstate bridges over Nogal Canyon between Albuquerque and Las Cruces was questioned by the highway department resulting in a limit of 86,400 pounds GCW for the operational tests on triples which were designated to be conducted between Albuquerque and Las Cruces. The turnpike doubles test conducted between Albuquerque and Raton were not so restricted.

5. Another House Memorial in 1978 extended the test period for an additional two years and requires a final report in October 1980.

6. New Mexico's authority to issue special permits for the longer combination tests on Interstate highways was questioned by the Federal Highway Administration on July 13, 1979.

7. In 1980, a House Memorial extended the operational test period to October 1982. Due to its concern about the strength of its bridges, the highway department established a maximum GCW of 86,400 pounds on all Interstate test routes.

Figure 8-29 - continued

Oregon

1. Bend - Portland made demonstration tests of a triple trailer combination between Bend and Klamath Falls in 1963.

2. In 1965, a triples trailer test was conducted near Portland by Consolidated Freightways in cooperation with the Oregon Highway Department.

3. Pull-down traction tests were made by Freightliner Corporation and Bend - Portland in 1967.

4. In December 1967, traction and power tests were conducted on the Mt. Hood Highway by the Oregon Highway Department.

5. Operational tests were made in 1967 and 1968 of 105-foot triple trailer combinations authorized to carry 114,500 pounds.

6. On September 26, 1967, the operation of 105-foot triple trailers was approved on four-lane highways.

7. Effective May 1, 1968, the operation of 105-foot triple trailers was extended to include selected two-lane highways.

8. In January 1969, further power and traction tests were made on the Mt. Hood Highway. Triple trailers were loaded to gross weights of nearly 119,000 pounds and were pulled by various truck tractor configurations.

9. Revised regulations issued by the Transportation Commission in 1974 authorized regular operation by permit of 105-foot triple trailers not to exceed 105,500 pounds gross weight.

10. Additional two-lane highways for triples operation were authorized in April 1976.

11. A Permanent Administrative Rule adopted by the Transportation Commission on March 25, 1980, allows operation of 105-foot double trailers consisting of two stinger-steered semitrailers and operation of all approved longer combinations during rainy weather conditions providing combination is equipped with an approved spray suppression system.

Utah

1. In Feburary 1965, Insured Transporters was granted a 90-day test permit to operate 110-foot longer autotransporter combinations between Salt Lake City and Wendover, Utah. Insured Transporters had tested this combination previously on a limited basis.

Figure 8-29 - continued

2. Some operational tests were conducted in 1968 and limited operations were permitted until 1969.

3. On March 25, 1969, a law was enacted authorizing the operation of longer combinations not to exceed a length of 108 feet and gross weights allowed by Bridge Formula B.

4. Operations were conducted on a limited basis until January 1974 when new regulations allowed expanded operation.

5. Technical tests were made in June 1974 as part of a year long study by the Department of Transportation.

6. New regulations, effective February 12, 1976, provided for the operation of longer multiple trailer combinations by permit not to exceed 105,500 pounds and 105 feet in length.

7. Stability and traction tests of longer combinations conducted during winter of 1976-1977.

Washington

1. Officials from the Department of Highways observed the 1976 Oregon tests on the Mt. Hood Highway.

2. A law passed in 1967 authorized the Department of Highways to conduct tests of longer combinations up to a maximum length of 105 feet.

3. Official observers attended the January 1968 Nevada tests.

4. Triple trailers and turnpike doubles were tested on four different occasions between January and September 1968.

5. Regulations which would permit operation of vehicle combinations not to exceed 105 feet in length were issued September 4, 1968.

6. A test of triple trailers under snow conditions was made in January 1969 between Seattle and western Washington.

7. Controlled operation by 10 truck companies was authorized in June 1969.

8. Wheel spray tests were made by the Department of Highways in September 1969.

9. A 90-day operational test was authorized for the period July 1 to September 30, 1969.

10. Technical and operational tests of a triples combination were made for a state legislative interim committee in November 1969.

Figure 8-29 - continued

11. A gross weight of 105,500 pounds was approved by legislative act in 1973.

12. In December 1973, the State Highway Commission authorized the operation of longer combinations but rescinded approval before the effective date.

13. Bill introduced in State Senate in January 1974 to prevent issuance of overlength permits for triple trailers. Bill did not pass.

14. Hearings were held in October 1977 on a proposal to approve the operation of longer combinations.

15. In January 1978, the Legislative Transportation Committee asked the State Transportation Commission to consider a proposal to operate longer combinations. The proposal was tabled.

16. A bill was again introduced in the 1979 state legislative to prohibit granting permits for triple trailers. The bill did not pass.

17. "B" trains up to 75 feet in length were approved September 1, 1979.

Wyoming

1. On February 6, 1967, the state legislature authorized the testing of longer combinations.

2. Demonstration tests of a triples combination were made in May 1967 for officials of the Highway Department and Highway Patrol.

3. Technical tests were conducted in April 1968 and operational tests were begun and continued through November 1968.

4. A gross weight of 101,000 pounds for non-Interstate highways was approved by state legislature effective May 20, 1971. The act also approved a length of 75 feet on all highways.

5. Operational tests of longer combinations not to exceed 105 feet in length were begun in December 1973 but were delayed until March 1974. Tests were continued until November when a train-damaged overpass structure caused cancellation of the test project.

6. A 1975 bill to authorize triple trailers died upon adjournment of the state legislature.

7. The 1976 state legislature passed a bill authorizing the operation of triple trailers but it was vetoed by the Governor.

8. A 1979 bill introduced in the state legislature to authorize triple trailers died in the Rules Committee.

Figure 8-29 - continued

Alberta

1. First tests (short term) made in 1968.

2. Comprehensive technical and operational tests made in 1969.

3. Operation of triples between Calgary and Edmonton approved in 1970 with 108,000 GCW as maximum on seven axles at 98 feet.

4. Benkelman beam tests by Alberta Highway Department showed triples to produce no more effect on pavements than other trucks.

5. In 1974, weights were increased for all trucks to 20,000 - 35,000-pound axles and 110,000 pounds GCW based on a bridge table similar to Table C.

Ontario

1. Operational tests of 110-foot "turnpike doubles" utilizing 45-foot semitrailers underway in 1980.

Saskatchewan

1. Braking tests on 5-, 6-, 7-, and 8-axle combinations at lengths up to 92.5 feet and gross weights up to 186,500 pounds conducted by the Transportation Agency of Saskatchewan in January 1980.

2. Demonstration tests of a 99-foot triple trailer combination with a GCW of 109,900 pounds were conducted on January 31, 1980, between Regina and Saskatoon.

3. Triple trailer operational tests between Regina and Saskatoon authorized by permit effective February 1, 1980, for combinations not to exceed 110,000 pounds GCW. Axle weight limits were set at 20,000 pounds for single axles and 35,000 pounds for tandems. Widths not to exceed 102 inches.

BEFORE THE
HOUSE COMMITTEE ON HIGHWAYS AND TRANSPORTATION
SENATE BILL 187
TESTIMONY OF STAN NEWMAN
CONSOLIDATED FREIGHTWAYS
TERMINAL MANAGER
GREAT FALLS, MONTANA

MY NAME IS STAN NEWMAN, I'M A NATIVE MONTANAN WITH DEEP AND PERMANENT ROOTS IN THIS STATE. MY GRANDPARENTS AND DAD CAME TO MONTANA VIA COVERED WAGON IN 1920.

I GRADUATED FROM HIGH SCHOOL IN 1968 FROM INGOMAR HIGH SCHOOL, INGOMAR, MONTANA, AND FROM NORTHERN MONTANA COLLEGE, HAVRE, MONTANA IN 1972.

I'M CURRENTLY TERMINAL MANAGER FOR CONSOLIDATED FREIGHTWAYS AT GREAT FALLS, MONTANA, AND HAVE BEEN IN THEIR EMPLOYMENT SINCE 1973. I'M HERE TODAY TO SUPPORT S.B. 187, THE OPERATION OF TRIPLE TRAILERS ON THE MONTANA INTERSTATE. CONSOLIDATED FREIGHTWAYS IS A NATIONWIDE LTL CARRIER SERVING ALL 50 STATES, CANADA, AND THROUGH VARIOUS DIVISIONS IS VIRTUALLY BECOMING A WORLD WIDE TRANSPORTATION COMPANY.

TRUST: CONSOLIDATED FREIGHTWAYS HAS BEEN IN OPERATION IN MONTANA FOR OVER 40 YEARS, WE HAVE A SUBSTANTIAL INVESTMENT IN MONTANA AND WISH TO CONTINUE TO EXPAND. JOBS ARE CREATED BY PROFITS AND INVESTMENT. IT IS IMPORTANT TO BUSINESS GROWTH THAT A FAVORABLE CLIMATE IS PRESENT TO ENCOURAGE INVESTMENT AND EXPANSION.

EXPERIENCE: CONSOLIDATED FREIGHTWAYS OPERATES TRIPLES IN SEVERAL STATES AND IN CANADA. OUR COMMITMENT TO SAFETY IS OBVIOUS.
43 MILLION PLUS U.S. MILES, 38 ACCIDENTS, SINCE 1973.
12 MILLION PLUS MILES AND 3 ACCIDENTS IN CANADA SINCE 1969.

SAFETY COMMITMENT: THE INDUSTRY HAS WORKED IN CONCERT TO INSURE MAXIMUM DRIVER TRAINING AND ENCOURAGES STRINGENT QUALIFICATION GUIDELINES.

PERCEPTION: THE PERCEPTION THAT WE ARE INTRODUCING A NEW AND REVOLUTIONARY IDEA TO MONTANA'S TRANSPORTATION SYSTEM IS FALSE. UNDER CURRENT STATE LAW AND REGULATIONS YOU CAN PULL A 3 UNIT COMBINATION ON ANY HIGHWAY IN MONTANA AS LONG AS THE FIRST UNIT IS A TRUCK.
WE ARE PROPOSING A 3 UNIT COMBINATION WITH A TRACTOR AND 3 TRAILERS BUT RESTRICTING THEM TO FOUR LANE INTERSTATE, AN IMPROVEMENT OVER EXISTING LAW.
WE NEED TRUCKS TO MAINTAIN A VIABLE TRANSPORTATION SYSTEM IN MONTANA. THE ARGUMENT THAT ALL TRUCKS ARE EVIL DOESN'T WASH AND IS RIDICULOUSLY IMPRACTICAL. WE HAVE TO HAVE TRUCKS TO SERVICE MONTANA, PURE AND SIMPLE.

ENFORCEMENT: WE ENCOURAGE STRICT ENFORCEMENT ON RULES AND REGULATIONS. WE WANT EVERYONE PARTICIPATING TO ADHERE TO ESTABLISHED GUIDELINES. THE TRUCKING INDUSTRY HAS A REPUTATION IN OTHER STATES AS BEING COOPERATIVE, CONCERNED AND CONTRIBUTING PARTICIPANTS IN THIS MODE OF OPERATION.

FEES: THE FEES STRUCTURE IS A REVENUE PLUS FOR THE STATE OF MONTANA. 3 TRACTORS PULLING 2 TRAILERS CARRY A TOTAL LICENSE FEE OF $1718 EACH OR $5154. 2 TRACTORS PULLING 3 TRAILERS CARRY A TOTAL LICENSE FEE OF $3001 EACH OR $6002.

BENEFITS: ON THE ECONOMIC SIDE A MORE COST EFFECIENT OPERATION IS NECESSARY IN TODAYS COMPETITIVE ENVIRONMENT TO MAINTAIN GROWTH AND EXPANSION. TO ENACT THIS BILL WILL LEAD TO MORE JOBS IN MONTANA AND PASS A TRANSPORTATION SAVINGS TO THE PUBLIC.

CONSOLIDATED FREIGHTWAYS STARTED OUT WITH 3 EMPLOYEES WITH AN ANNUAL PAYROLL OF $6000. WE HAVE GROWN TO 180 EMPLOYEES WITH A PAYROLL IN EXCESS OF $6,000,000. WE FEEL WE ARE A PART OF MONTANA AND IN TURN MONTANA IS A VITAL PART OF THE CONSOLIDATED FREIGHTWAYS NETWORK.

WE NEED THE TOTAL SUPPORT OF THIS COMMITTEE TO ENSURE SUCCESS IN THIS ENDEAVOR. IN CLOSING I URGE EACH OF YOU TO SUPPORT S.B. 187.

WILLIAM D. HURLEY, P.
Director

GENE STURZENEGGER,
Assistant Director

UTAH DEPARTMENT OF TRANSPORTATION

4501 South 2700 West
Salt Lake City, Utah 84119

March 13, 1987

To Whom It May Concern

My name is Norman Lindgren. I work for the Utah Department of Transportation as Assistant to the Director. Part of my responsibility is to work with the trucking industry, Federal Highway Administration, Western States and local agencies regarding size, weight and safety with specific interest on longer combination vehicles.

We have been asked to briefly review the history of triple trailer operations in Utah. Utah has been operating triples since 1967 and with the help of the Western Highway Institute (WHI) was a leader in developing rules, regulations and safety requirements for the longer combination vehicles. The mechanical operation of triples such as axle weight distribution, offtracking, etc., is well documented and I will not take time to cover these areas.

The primary interest in LCV's is safety and what Utah has established to regulate their operation. Following is the procedure we use when a carrier has requested a triples permit.

A carrier must fill out an application that covers three areas:

a. Application - permit - routing
b. Power units
c. Certification of the company's safety program.

We will cover each one to show the importance on what Utah feels is necessary to obtain a permit.

a. Application/Permit

This is for the purpose of routing the longer combination vehicle (LCV - triples). Utah allows the operation of triples on the interstate system only. The applicant must show his intended route and include addresses of destination and origin.

The Department and the Utah Highway Patrol review each application. We allow the operation off the interstate highway to the terminal only; however, some carriers must use a staging area near the interstate due to the location of their terminals. Safety to the public as well as protection to our roads and structures govern the route approval.

B. Power Units

Carrier must list each tractor that will be permitted to pull triples. Each tractor has a separate permit. The cost is $350.00 per tractor.

c. Certification of Carriers Safety Program.

The UDOT Safety Division receives this portion of the application. A thorough investigation will be completed prior to allowing the permit. If a carrier has a questionable record or is a new carrier within the State, an inspector from the Safety Division will do a safety audit at the applicants terminal. If out of state, the Safety Division works with the Federal Highway Administration region office to secure the necessary information. Utah has refused many carriers a LCV permit due to being in non-compliance.

We have a system that has worked well in controlling the permitting of triples. Carriers are aware of what is required and we have seen a dramatic improvement in their safety programs.

Another area of concern would be the operation of triples in inclement weather. Utah adopted the Federal Motor Carrier Safety Regulations, Section 392.14, which covers the restrictions of use during inclement weather. Carriers in violation are cautioned by letter with end results of removal of permits if the violation continues. Utah has had very few problems with carriers trying to operate during bad weather. If we are aware of a violation, we move to correct.

This past winter, the carriers started a safety weather program which for the first winter has shown excellent results. Carriers participating in the program are assigned one week during the winter months to act as a command post. When weather becomes a factor in operating triples, the information is called to one location. This one location will gather weather conditions for the entire state. Carriers wishing information to dispatch triples call the command post. This has worked fairly well for the first year and we hope to see an improvement for next winter. The carriers are concerned and their efforts are greatly appreciated.

SUMMARY

Utah has an excellent safety record involving triples. We have had no serious accidents during the twenty years of operation. The screening and training of drivers operating the LVC's is a key to the excellent record.

Highways and Transportation Committee
Honorable Larry Tveit, Chairman
Montana State Legislature
State Capitol
Helena, Mt. 59601

Subject: Legislation for Allowing Triple Trailer Combinations

Dear Chairman Tveit and Committee Members:

The burdens that have been inflicted on the trucking industry in the past years has an economic effect upon my life as I am an employee of Consolidated Freightways in Billings. Allowing triples to operate in a safe and prudent manner in the state would allow us to progress in the right direction. Safely operated, triples will help keep transportation cost down, allow companies to better utilize equipment and therefore be more efficient and will keep Montana as the main east-west route.

If we disallow triples and form a barrier to east-west traffic that traffic will simply run to the south of us further compounding the economic problems that we currently face.

The undersigned ask that you give this issue your favorable consideration.

	ne	Address	City
1	[illegible]	943 Ida Drive	Billings MT
2	[illegible]	[illegible] 31 ST	Billings MT
3	Melvin D McElhiney	905 Princeton	Billings mt
4	[illegible]	[illegible]	[illegible]
5	Ronald E Bradley	2308 Rosebud Dr.	Billings, Mt
6	[illegible]	419 19th St [illegible]	Bldgs MT
7	Tom L Pearson	Box 3150 Hwy 212	Laurel, Mont
8	[illegible]	1466 Heatherwood Dr. [illegible]	Bldgs MT
9	M O Armstrong	650 Dakota Ave	Billings Mont
10	D L SCHNEIDER	1036 GUILFIELD DR	BILLINGS MT
11	J R Klinger	1221 Substation Cir	Billings MT
12	M. W. Mills	4196 RYAN AVE	Billings MT.
13	[illegible]	1201 1st East Roundup Mont.	Roundup Mont
14	Lorene Bent	1171 TOOLE CT [illegible]	BILLINGS MT
15	[illegible]	P.O. Box 5 to Billings MT	Billings Mont
16	Douglas L Graves	2034 GEORGE ST	BILLINGS Mont.
17	[illegible]	[illegible] DISTRICT	Billings MONT
18	Joe Edwards	573 Woodland Rd	Billings, Mont
19	[illegible]	P.O. Box 251	Joliet MT
20	John T Coles	2317 E MARYLAND LN LAUREL MT 59044	LAUREL MT.
21	Mark Seely	2215 MIAD RD #2	Billings MT
22	Robert McNutt	728 Starlight Dr.	Billings, MT.
23	[illegible]	1108 Montana Ave [illegible]	[illegible]
24	Robert Gallagher	922 Yellowstone River Road C-3	Billings MT
25	Mac Hall	273 Quiet Water	Billings, Mt.
26	Robert E Purdy	428 Green Spring rd	Billings, MT
27	John L Ferguson	1527 Cheryl st [redacted] 59105	Billings, MT
28	Pat Watson	336 LAURIE LANE 59105	BILLINGS, MT
29	Wayne Sapp	1161 CENTENNIAL	BILLINGS, MT.
30	Robert E Morton	2410 CONSTELLATION TRAIL [illegible]	BILLINGS, MT
31	Bill Smith	1700 E. Bridger, Bismarck, N.D.	
32	Mary Schleicher	2317 ELM ST [redacted]	Belmp mt
33	Bill Morgan	458 Bunting St	Billings MT

	Name	Address	City
1	[illegible]	457 CREEKWOOD PL 59102	[illegible] MT
2	[illegible]	1929 Caraway Ave Billings Mont 59101	Billings Mont.
3	[illegible]	3842 Heritage 59102	Billings Mont
4	[illegible]	824 Allis St 59104	Billings, mont
5	[illegible]	1849 Dogwood Dr. Billings 59105	Billings, MT.
6	[illegible]	3148 Beckett Ln Blgs. 59101	Billings, MT
7	[illegible]	914 Kale Drive Billings Montana 59	
8	[illegible]	3125 69th St Sk Blgs Mt.	Blgs Mt 59106
9	[illegible]	5302 Lyman Ave	Billings, MT 59101
10	[illegible]	Rt 1 59103	[illegible] Mont.
11	[illegible]	31 Sunset 59105	Billings, mt.
12	[illegible]	853 Crest Dr.	Billings, mt
13	[illegible]	419 Kenwood Ln.	Billings Mont
14	[illegible]	1268 Alderney Drive	Billings, Mont
15	[illegible]	1803 yellowstone ave	Billings, MT.
16	[illegible]	Box 327 Reedpoint, Mont. 59069	Reedpoint, Mont.
17	[illegible]	823 Windsor St. Billings Mont.	59105
18	[illegible]	[illegible] Billings MT 59101	
19	[illegible]	328 Nantucket Dr	Billings, MT 59102
20	[illegible]	[illegible]	[illegible]
21	[illegible]	4536 Bremner Ave. R+3 Billings MT 59105	Billings MT
22	[illegible]	Lompoc Billings MT 59064	
23	[illegible]	141 Eagleson Court North	Billings MT. 59105
24	[illegible]	2956 Springfield	Blgs MT 59101
25	[illegible]	2293 N 10th Rd	Lockwood MT 59033
26	[illegible]	3684 Relay	Billings MT 59102
27	[illegible]	2212 Diamond	Billings
28	[illegible]	5811 Shepherd Rd E Shepherd MT.	Shepherd MT 59079
29	[illegible]	2811 Vermillion	Blgs MT 59102
30	[illegible]	458 Bunting St.	Billings MT 59101
31	[illegible]	405 Crest Dr.	Billings, mt. 59102

	ne	Address	City
1	[illegible]	[illegible]	[illegible]
2	[illegible]	5006 Dayne Rd.	Shepherd
3	[illegible]	~~Worden, Mt.~~ Rt. #10	~~Worden, Mt.~~
4	[illegible]	943 [illegible]	Billings
5	[illegible]	4238 [illegible]	Bilgs
6	[illegible]	~~Shepherd, Mt.~~	
7	[illegible]	6807 Frey Rd ~~Mt~~	Shepherd
8	[illegible]	2631 Custer Ave.	Billings
9	[illegible]	2229 [illegible]	Blgs MT
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Alberta
TRANSPORTATION

Transportation Safety Branch

Main Floor
Twin Atria Building
4999 - 98th Avenue
Edmonton, Alberta, Canada
T6B 2X3

ATTENTION

Mr. D. Khalli
Canadian Freightways
Calgary

For your information.

Paper copy being forwarded by mail.

Per L. Gardecki
L. Gardecki for A. D. Cherwenuk

Date March 17/87

File: 9459-3

March 16, 1987

Mr. Bernie Havdahl
P. O. Box 1714
HELENA, Montana
U.S.A. 59601

Dear Sir:

Mr. Keith Scott of the Alberta Trucking Association asked if I could provide you with a summary of Alberta's experience with triple trailer combinations.

Attached is a synopsis outlining the permit procedures followed in Alberta and some observations based on almost 18 years of triple trailer operation. The synopsis also includes observations derived from recent testing of other longer trailer combinations in Alberta and other parts of Canada and the U.S.

I trust that this will be useful to you. Please do not hesitate to contact us if you have other questions of require more information.

Yours truly,

A. D. Cherwenuk, P. Eng.
Assistant Director

/lg

attachment

AND/OR EXTENDED LENGTH DOUBLE TRAILER COMBINATIONS

The following conditions shall apply to the operation of Triple Trailer Combinations and/or Extended Length Double Trailer Combinations.

1. THAT the permittee shall, upon request of any authorized employee of Alberta Transportation or any peace officer, permit and assist such employee or peace officer to make any inspection, test, examination or inquiry as such member may wish to make in regard to the operation of these trailer combinations.

2. THAT the permittee undertake and assume full responsibility for the operation of these trailer combinations and will indemnify and save harmless Alberta Transportation, it's officers and employees, from and against all actions, causes of actions, claims and demands which may arise as a result of these operations.

3. THAT the permittee shall maintain in full force and effect a policy of insurance against Public Liability and Property Damage in a limit of not less than one million dollars ($1,000,000).

4. THAT the permittee shall abide by the routes, vehicle dimensions, equipment and conditions specified on or attached to the permits, which may change from time to time.

5. THAT the permittee shall carry a copy of these permits in each power unit.

6. The Motor Transport Branch reserves the right to temporarily suspend or terminate these permits at any time the Branch considers it to be in the public interest to do so.

7. Any failure to comply with the conditions as set out herein shall be sufficient cause for the Branch to withdraw these permits at any time.

8. All equipment used in overlength combination units must undergo an annual mechanical inspection to the standards established by the Transportation Safety Branch.

9. THAT the permittee should use only drivers on these combination units with considerable experience in the operation of long multiple truck trailer combinations.

10. THAT the permittee should have a designated safety supervisor and should establish the necessary training program for drivers of overlength combination units.

I (WE), THE UNDERSIGNED, HAVE READ THE ABOVE CONDITIONS AND ACCEPT TO UNDERTAKE TO CARRY OUT ALL THE PROVISIONS OF THE PERMIT AND TO ASSUME THE RESPONSIBILITIES STATED HEREIN.

_____

COMPANY NAME

ADDRESS _____

_____

_____

_____

PRESIDENT

_____

SECRETARY Company Seal

TRIPLE TRAILER COMBINATIONS
PERMIT CONDITIONS

1. All trailers used in triple combination units shall be of substantially the same length with a 1.0 m variation in trailer lengths permitted, and each trailer shall not exceed 8.6m. in length.

2. All new trailers, purchased after January 1, 1986 for use in overlength combination units, shall be equipped with the widest available axle and suspension system not to exceed the trailer width.

3. The vehicles in a combination shall be so designed, constructed, and coupled together as to ensure that any such combination travelling on a level, smooth, paved surface will follow in the path of the towing vehicle without shifting, swerving, or swaying from side to side over 10 centimetres to each side of the path of the towing vehicle when it is moving in a straight line.

4. The trailers used in triple trailer combinations shall be arranged such that the trailer having the greatest gross vehicle weight shall be the first trailer in the combination, and succeeding trailers shall be arranged in order of decreasing weight.

5. No overlength combination unit operation shall be engaged in over weekends or statutory holidays (i.e. between 4:00 P.M. of the day preceeding the weekend or holiday to 12:01 A.M. of the day following the weekend or holiday).

6. The permit holder shall not operate overlength combination units during adverse weather conditions or when the highway is icy or heavily snow covered.

7. Where a route falls within a city boundary permit holders shall be responsible for obtaining permission from cities to operate the overlength combination unit into and out of such cities in accordance with the routes and conditions assigned by the city.

8. Any breakup or makeup of overlength combination units must be done off public roadways on private property.

9. These combinations shall not cross the opposing traffic lanes of Highway #2 at Red Deer.

10. No entrance to or exit from Highway #2 be made except at interchanges, rest area turnouts, or where acceleration or deceleration lanes are provided.

11. Triple Trailer Combinations shall be allowed only on the following highways:

Highway No.	1	Calgary to Banff Park Gate
	2	Nanton to Edmonton
	16	Edmonton to Junction 43
	43	Junction 16 to end of 4 lane near Junction 33.

12. Access routes - as follows:

    Red Deer via 4 lane roadways.

TRIPLE COMBINATION EXPERIENCE IN ALBERTA

Testing of the triple trailer combination took place in the summer of 1969. Official approval to operate this combination on an annual permit basis was given after nine months of observations. During this period, demonstration tests on and off the highway were staged, which included trailer stability, braking characteristics, operating speeds, splash and spray, and pavement effects. (Reference 1 contains the results of this early test program). An updated review of the triple combination was carried out in 1985, in conjunction with the testing of the Turnpike double. The study basically confirmed previous conclusions.

Nearly thirty carriers have now received a permit to operate the triple combinations in Alberta. These permits are renewed annually, upon a satisfactory vehicle inspection. The trucks are restricted to only designated divided highway facilities, as well as to other equipment and operating requirements contained in the permit (see attached). Maximum length allowed is 102', with a maximum GVW of 118,000 lbs.

The triple program has generally been operating successfully in Alberta for the past 15 years. The reasons behind this good track record are quality drivers, conscientious owners, annual inspections, stringent permit conditions and high standard road facilities. These elements must be present to overcome the poorer trailer stability inherent in a triple combination. As further research in Canada and in the U.S. has shown (References 3 and 4), a 'B' dolly type converter can also enhance the stability of a triple.

Reference

1. *Alberta Department of Highways and Transportation, "Report on the Testing of Triple Trailer Combinations in Alberta", Edmonton, Alberta, April, 1970.*

2. *Alberta Transportation, "A Traffic Operation and Performance Evaluation of Overlength Truck Combinations", Edmonton, Alberta, December, 1985.*

3. *Ervin, R.D. and Guy, Y., "Volume 1 - The Influence of Weights and Dimensions on the Stability and Control of Heavy Trucks in Canada - Part 1", Roads and Transportation Association of Canada, Ottawa, Canada, July, 1986.*

4. *Billing, J.R., "Volume 3-Demonstration Test Program: Summary of Tests of Baseline Vehicle Performance", Roads and Transportation Association of Canada, Ottawa, Canada - July, 1986.*

May 12, 1987
SB 187 - Lane Bill Fa

Robert Swan
Consolidated Freightways
Safety Supervisor
Salt Lake City, Utah

I was employed in the transportation industry from 1951 thru 1983 as a line driver. During my years as a driver, I operated all types of equipment, 35' semis, 40' semis, doubles combinations and triples combinations. I also have driven both cab over and conventional tractors.

Between 1966 and 1983 while employed by IML Freight and Consolidated Freightways, I accumulated 1.7 million accident free miles, driving semis, doubles and triples combinations.

My responsibilities as safety supervisor are the safe operation of all Consolidated Freightways equipment, to and from Salt Lake City. My territory covering our triples operations is Utah, Idaho, Nevada, and Oregon.

All carriers "Triples Permits" in these states, have adverse weather restrictions. To comply with these restrictions, many carriers organized a road and weather exchange center in Salt Lake City. Nevada also helped the carriers set up a center, in Elko Nevada. This center is operated by the Nevada highway patrol dispatch.

Consoliated Freightways has operated a strictly cab over power fleet since the 1940's. In 1987 we are placing 485 conventional tractors in our fleet. We will have meetings and put out bulletins on the different handling characteristics of cab over vs conventional power.

Triples again involve a different combination from what the drivers are used to. We now hold orientation class including a video on operating triples for all new drivers in Salt Lake.

My experience, both as a driver and safety supervisor, is that triples can be operated as safe as any other type of equipment now running on your highways. The braking ability of triples is better than doubles. On a tight curve or turn, a triples combination tracks better than a tractor and 40' trailer combination.

Consolidated Freightways safety record on triples speaks for itself. Our figures include even the $20.00 broken mirrors. Accident records from Jan. 1 1984 thru Dec. 31, 1986.

VEHICLE	MILES OPERATED	FREQUENCY PER MIL MILES
SEMIS	239,398,058	2.89
DOUBLES	955,063,334	2.23
TRIPLES	20,349,500	1.33
TOTAL	1,214,810,892	2.35

If this bill is approved, triples can and will be operated safely, and within our permitted authority, in your state.

Thank You.

Robert Swan

BEFORE THE MONTANA HOUSE COMMITTEE ON HIGHWAYS AND TRANSPORTATION

SENATE BILL 187

TESTIMONY OF MEL GREEN, TERMINAL MANAGER--A N R FREIGHT SYSTEMS, INC.--
GREAT FALLS, MONTANA

My name is Mel Green. I am Terminal Manager in Great Falls, Montana, for A N R Freight Systems, Inc.

I am appearing here today in support of Senate Bill 187, the authorization of triple trailer combinations on the interstate highway system in Montana.

I have been a resident of the State of Montana for 14 years and I have been a terminal manager for A N R Freight Systems for 14 years. I have raised four children and all were educated through the Montana school system.

I therefore have a two-fold reason for appearing in front of this committee in support of Senate Bill 187, one being about passing this bill and permitting passage of this triple bill in the State of Montana which will in turn mean cheaper prices for consumer goods for the citizens of Montana.

The second reason is job security. The only way to enhance job security is through increased productivity, which Senate Bill 187 will definitely provide.

A N R. through the purchase of Garrett Freightlines has become a member of the Montana Business Community and will continue to provide the transportation needs to the citizens of Montana.

Garrett Freightlines has provided both interstate and intra-state service for Montana for over thirty years. I, myself, have been a Garrett-A N R employee for 34 years. We have been able through the yers to provide a viable transportation service to all people of Montana at the cheapest possible freight rates. We must be more productive which also means we must have more productive trucks. This is what Senate Bill 187 will provide. Cheaper freight means cheaper prices for consumer goods for the citizens of Montana.

Cheaper freight rates is of vital concern to business of all kinds when expansion into other areas of our country is considered. We are at times called upon by various businesses for rate quotes on factory and distribution moves, and the areas with triple trailer operations have the lower freight rates.

We are proud to be a part of Montana, and we make a meaningful contribution to the economy.

At the present time our operation in Montana consists of the following:

Nine terminal facilities in Montana

One hundred forty Montana residents earn their livelihood with ANR

We had an annual payroll of $3,566,538.71

Payroll tax amounted to $224,640.00

Highway user fees were $208,729.00

Other purchases in Montana were $721,411.00,

For a TOTAL OF $4,721,318.71

We feel we make a worthy business partner with the people of Montana and add to the economical health of Montana.

Thank you.

BEFORE
MONTANA HOUSE COMMITTEE ON HIGHWAYS AND TRANSPORTATION

SENATE BILL 187

Testimony of Kenneth M. Powell
Manager of Linehaul Western Area
ANR Freight Systems, Inc.

I am Kenneth Powell, Linehaul Manager for the Western Area for ANR Freight Systems, Inc. I am appearing here today in support of Senate Bill 187, the authorization of triple trailer combinations on the interstate highway system in Montana.

With the introduction of a new method of performing a service, people who are unfamiliar with our triple trailer operation have a great concern for safety.

Our safety record speaks for itself. In 1986 ANR Freight System ran 91,712,505 miles. Of those 91,712,505 miles, 6,130,288 were triple miles. ANR experienced only five accidents involving the operation of triple trailers. Triple trailers prove to be safer than any other type of operation.

We will continue to work toward the safe operations of our tractor/trailer units on America's highways, and I would like to take this opportunity to review a program which the major carriers and the states of Utah, Nevada, and Idaho formulated in September and October of 1986 to control the operation of triple trailer combinations in adverse weather conditions:

Through meetings with various agencies of the above-mentioned states, a line of communication was established to enable the carriers to gather weather and road condition reports which is gathered at a specific dispatch office of the carrier who has the responsibility of compiling this data for that week. Then all carriers may call the dispatch for any and all weather information and road conditions. Based on this information the decision is made whether to dispatch triple trailers or to go with the double mode.

This road condition report is updated by calls received from drivers, safety supervisors, calls to numbers provided us by state agencies, ports of entry, and other sources.

If by chance we get caught in an unpredictable situation and it is unsafe to operate triples, we will drop the third trailer and continue.

We will operate triple trailer combinations only when it is safe to do so.

Thank you,

Kenneth M. Powell

STATEMENT OF

UNITED PARCEL SERVICE

BEFORE THE

HOUSE COMMITTEE ON HIGHWAYS AND TRANSPORTATION

IN SUPPORT OF

SENATE BILL 187

"AN ACT ALLOWING

SPECIAL VEHICLE COMBINATIONS

TO OPERATE BY SPECIAL PERMIT

UPON INTERSTATE HIGHWAYS"

---

3 North 35th Street
Billings, MT 59101

Thomas Hardeman
Manager, Public Affairs

Introduction

My name is Tom Hardeman. I am Public Affairs Manager for United Parcel Service. I have been with UPS for 32 years and have worked as a driver and have managed all aspects of the business, including tractor trailer operations. I am appearing here today in support of SB 187, which would authorize the use of triple trailer combinations on the Interstate highways of Montana.

Current Operations

United Parcel Service has service to and from all points in the 48 contiguous United States. We also have operations in Alaska, Canada, Puerto Rico, and many foreign countries including Japan.

Decades of experience with triple trailer vehicles in ten states has demonstrated that they are economical and, more importantly, safe to operate.

United Parcel Service has used three-cargo-unit combinations in Colorado, Idaho, Kansas, Ohio, Oregon, Nevada, North Dakota, South Dakota, Utah, and most recently Oklahoma as a result of legislation passed last year authorizing their use (Appendix A). The accident/mile ratio of these vehicles in recent years is one mishap for nearly 15 million miles. We travel approximately 5 million miles per year in triples and have been accident free for over three years.

Last year we travelled a total of 560 million miles in our tractor/trailer operation. We had 154 D.O.T. reportable accidents. This represents a total frequency of 1 accident for every 3.6 million miles. Forty percent (40%), or 224 million miles were travelled with a single, generally a 40-foot trailer, and we experienced 120 accidents for a frequency of one accident for every 1.9 million miles. Fifty-nine (59%), or 330 million miles were travelled with double trailers and we experienced 34 accidents for a frequency of one accident for 9.7 million miles. One percent (1%) or approximately 5 million miles were with triple trailers, and we had zero (0) accidents.

To achieve an accident frequency equal to our overall ratio of one per 3.6 million miles you have to drive your personal car 20,000 miles per year for 180 years without a D.O.T. reportable accident.

UPS has found that triple trailer vehicles are extremely safe. Extensive driver training and effective preventative maintenance have resulted in the past three years being accident free.

Benefits to Montana Residents

UPS is currently a significant contributor to the economic stability of Montana as shown in Appendix B. In the summary of our 1986 operations you can see the detail. The 589 employees in the state are identified by location in Appendix C. This is a 25% growth in employment over the last 4 years.

Three-cargo-unit vehicles will decrease the cost of operations and will lessen the upward pressure on rates to shippers and ultimately reduce prices to the Montana consumer. Additional benefits will accrue from more efficient use of the highway system, reduced fuel consumption and fewer commercial vehicles on the highways.

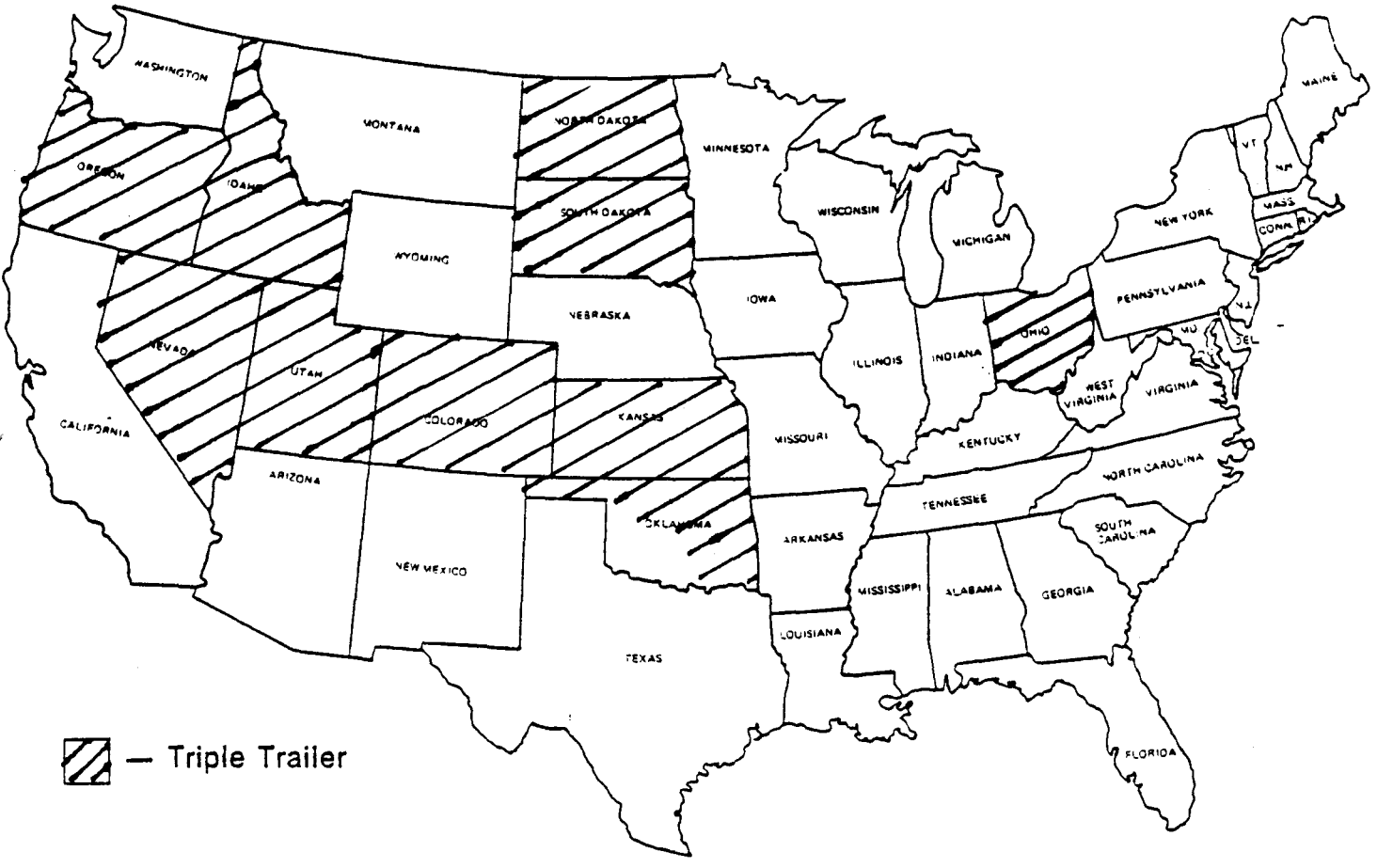
Summary

We believe the approval of triple trailer operations in Montana will bring about safe, efficient transportation. It will bring about improved economic stability to an industry that travels many miles across the state and will encourage future economic development.

Accordingly, United Parcel Service urges the Montana House Committee on Highway and Transportation to vote yes on SB 187.

Appendix A

Decades of Experience Confirm Longer Combination Vehicle Safety



Appendix B

SUMMARY OF MONTANA 1986 OPERATION

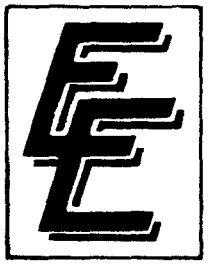
Number of employees worked in 1986:	(1,160)	589
Number of daily pickup accounts:		2,692
Number of packages delivered in 1986:		9,202,673
Number of packages picked up in 1986:		2,956,512
Total number of vehicles owned:		307
Feeder miles:		3,411,474
Package car miles:		8,752,065
Number of operating centers:		16
Number of sort facilities:		3
Actual expansion cost in 1986:		
Billings Hub		$ 922,000
Bozeman		$ 450,000
Planned expansion cost in 1987:		
Helena		$ 531,000
Total payroll paid in 1986:		$ 16,143,888
Total purchases to Montana vendors in 1986:		$ 5,989,408
Total Montana state unemployment tax paid in 1986:		$ 176,986
Total Montana state income tax withheld from employees:		$ 602,737
Total other taxes (personal property, etc.):		$ 166,530

Appendix C

MONTANA EMPLOYEES BY LOCATION

AS OF JANUARY 1987

Billings	138
Wolf Point	19
Malta	5
Miles City	16
Glendive	22
Broadus	5
Helena	22
Butte	31
Missoula	84
Kalispell	38
Libby	12
Great Falls	48
Lewistown	15
Cut Bank	12
Havre	13
Bozeman	54
SUBTOTAL	534
District Office	55
TOTAL	**589**



EDSON EXPRESS INC.

My name is James A. O'Brien. I am Director of Safety and Security for Edson Express, Inc. I am appearing here today in support of SB187, which deals with the operation of triple trailer combinations on the Interstate Highway System in Montana.

Edson Express, Inc. is a Western States LTL Motor Carrier serving the markets of most major cities to and from the Montana cities of Miles City, Billings, Bozeman, Great Falls, Kalispell, and Missoula. We are also serving from and to those Montana points on an Intrastate basis.

Although we serve markets outside of the Rocky Mountain Region, we consider the tier states of Colorado, Wyoming, and Montana to be the dominent core of our existance. Our acquisition of Salt Creek Freightways in April of 1986 has solidified that position. The purchase itself preserved the jobs of many former Salt Creek employees in Montana. We are committed to the well being of all our employees and to the economic health of the State of Montana.

SB187 is a safe means of bringing much needed revenue to the state and would also allow business, industry, and individuals to retain more of their profit dollars and wages.

Simple math indicates that three (3) trailer loads of freight could travel for less money than two (2) trailer loads pulled by a single tractor. Part of the savings, could, of course, be passed on to the shipping and receiving public. More profit dollars spells growth to all participants right down to the wage earner. Growth, in itself, would provide for expansion of real estate and equipment which translates into tax dollars for state and local government.

Should SB187 be passed into law, Edson's sixty four (64) Montana employees and $1,900,000 payroll could be increased to an unknown figure at least above 15%. We use a conservative figure because of unknown freight discounts, rate proposals to shippers, competition and increased freight lane growth due a more competitive market in Montana that would draw business away from other markets such as Spokane, Fargo, Salt Lake, or Denver.

Expansion of our present break bulk facilities in Casper, Billings, Three Forks, and Missoula would mean additional real estate tax dollars to the state. The use of triples would help make this possible by increasing our line haul miles and tonnage through Montana to the Northwest, Salt Lake and Minnesota markets.

The most important aspect of this proposal is the safety of the motoring public. "Unsafe" is the most prominent word used when triples are mentioned. Why some perceive this as fact is unknown. In reality triple trailer combinations have a better safety record than all other single and combinations. I am sure that testimony from myself and other companies here today will show little or no accidents with triple trailer combinations. At Edson Express we have run four (4) states, some for five years, and many thousands of miles with not one single accident. To ensure this safety record, Edson has an aggressive, full time Safety Department. In fact, most of our line haul drivers are certified for the operation of triples. We have the capability, as most major carriers do, to train our drivers and have the office staff to support any analysis or reporting that may be required.

We ask that any decision you make be in favor of the trucking, shipping and states economic benefit.

EXHIBIT #4
DATE March 13, 1987
SB
Wilson Bill
Family

WHI Critique: Longer Combination Vehicles Operational Test California Department of Transportation March, 1984

Western Highway Institute
San Bruno, California

STATEMENT OF FRANK E. HAWLEY, ENGINEERING CONSULTANT
WESTERN HIGHWAY INSTITUTE
BEFORE THE MONTANA HOUSE HIGHWAY AND TRANSPORTATION COMMITTEE
ON FEBRUARY 11, 1987
REGARDING SENATE BILL 187

My name is Frank E. Hawley. I am an engineering consultant for the Western Highway Institute, a non-profit research organization sponsored by the trucking industry in the western United States and Canada. For over 40 years the Institute has been engaged in research on heavy vehicle sizes and weights, operational characteristics, and taxation, and in providing coordination between government and industry on technical matters.

I have been associated with the trucking industry since 1981 when I retired from a 36-year career as a highway engineer and administrator in the Federal Highway Administration. So I think I am in a unique position to offer some insights on the matter before you today -- triple trailer truck operations.

Western Highway Institute has been involved in the testing and operation of long combination vehicles (LCVs) in the western states since the mid-60s. All 11 western states have hosted LCV tests at one time or another. This includes several tests in Montana as were described to you by Mr. Havdahl. The results of these 50 or so tests have been published in over a dozen reports, in numerous technical papers and summarized in a comprehensive report of over 500 pages prepared by WHI for the TRED Foundation in 1980.

Experience from these many years of tests and from day-to-day operations of carriers (as has been described by other witnesses here today) forms the basis for model special LCV permit regulations which were developed 15 years ago by WHI for the western trucking industry. These model rules were, in turn, the basis for the working draft of proposed rules for Montana and the Statement of Intent that you have before you. We strongly endorse the adoption of special rules for LCV operations and would be pleased to assist the state in developing the final rules for Montana, if desired.

As you have heard today, the safety and performance record of triple trailer combinations is firmly established. Perhaps it would be more instructive, then, if I were to comment on some of the questions and allegations that have come up from time to time about their operation.

For example, there is a report and video tape being circulated from a 1983 California test which describes an undesirable "whip and sway" of the rear trailers of the triples combination. Western Highway Institute prepared a detailed critique of that report, copies of which are being furnished you today. The triples sway question is addressed on pages 20-22. There is no question that undesirable triples sway can occur and that it occurred on the California test. The point is that it is a condition that occurs rarely, and when it does it is easily dealt with by experienced operators. Proper selection of equipment, fifth wheel lubrication and driver attention are the most important elements to look at. In the case of the California test, the sway phenomenon was attributed by WHI engineers to driver inattention and an unusually fast power steering system. It has not been a problem in the dozen or so tests we have run in other states.

We occasionally hear a statement to the effect that "one truck does more road damage than 9,600 cars", but no one ever explains where the figure comes from. It comes from a complicated extrapolation of data from the 1958-59 AASHO (American Association of State Highway Officials) Road Test. Engineers involved in designing that test (and I was one of them) will tell you that there was never any intention of using the data in this way. The AASHTO test was set up to compare how different pavement designs react to different heavy axle loads. No automobiles or light trucks were ever used on the test. Furthermore, the comparisons did not consider the effects of weather damage, construction quality, maintenance or aging, which research has shown has more effect on pavement life than axle loads. Certainly heavy trucks do cause more pavement wear than automobiles, but much more research needs to be done before anyone can say how much. In any case, this argument is extraneous to the triples question because, as has been explained, the bridge formula constrains the maximum gross weight with the result that average axle weights are substantially below those on standard doubles units and even further below legal maximums.

A January 1986 report of the Environment Policy Institute is being circulated around the country which purports to analyze the impact of the "Pinwheel Amendment". That amendment is simply a proposal which would give western states the permissive authority to do what most of them are doing already: Issue special permits for LCVs up to nine axles with gross weights controlled by the bridge formula. A close study of the EPI report would show that it does not address the long combination question directly. Rather, it is an attack on big trucks generally. The report implies LCVs increase bridge and pavement deterioration, whereas, as I have stated, the opposite is true. Their references to certain problems on some of the western LCV tests are taken out of context and fail to point out that the conclusions from of all of these tests were favorable to the continued operation of this equipment. A copy of a more detailed analysis of the EPI is attached to my written statement.

The vast highway network on which LCVs have been operating over the past 20 years is perhaps the best laboratory for testing their worth. You have heard from some of the "technicians" working in that laboratory - real world people operating real world equipment under real world conditions. They have enjoyed some spectacular successes. I can only tell you that those successes are backed up by many person-years of inquiry, testing, monitoring, and reporting by Western Highway Institute. I'd be pleased to respond to any questions you might have about our experience.

THE FOLLOWING 259 MONTANA SHIPPERS SUPPORT SB 187 WITH LETTERS

ANACONDA

Intermountain Transportation Company
Grizzly Boot Company
AFFCO - Foundry/Fabrication/Forge
Anaconda Service and Cycle Center
Wayne's Floor Covering
Washoe MFG. CO.
Osco Drug
Washoe Mfg. Company
Osco Drug
Grizzly Boot Company
Snapshot Photo
Anaconda Service & Cycle Center
Pad-N-Pencil
Thrifty Drug Store, Inc.
Lutey's Furniture
Don's Sport Center
Midtown Variety
Dee Motor Company

BILLINGS

Standard Parts & Equipment
Storage & Warehouse Company
6 Robblees, Inc.
Holeman GM Diesel, Inc.
Wesco
Northwest Pipefittings, Inc.
Hennessy's
Tractor & Equipment Company
Associated Glass
Cummins Power, Inc.
Keystone, Inc.
Sportsmen's Supply, Inc.
Valley Welders Supply, Inc.
Crown Parts and Machine
Inland Truck Parts Company
Gas Supply and Equipment Company
Tri-State Equipment
Northwest Industrial Supply Company
Clapper Company, Inc.
Catey Controls, Inc.
2M Company, Inc.
Carquest Distribution Center
Marion-Dresser Industries
Montana Bearings, Inc.
Power Transmission Equipment
Macon Supply
D & D Door and Glass
Patco Drilling Supply

BLACK EAGLE

Instant Ticket Factory, Inc.

BOZEMAN

ANR Freight System
Crescent Electric Supply Company

BUTTE

Whalen Tire
Roach & Smith
Glacier State Electric Supply Company
Christie Transfer & Storage, Company
Town Pump, Inc & Affiliates
W E S C O - Westinghouse Electric Supply Company
Port of Montana
S. J. Perry Co., Inc.
Miller's - Boots/Shoes/Saddlery
H. B. Brinck and Associates
Ossello's
Maydwell & Hartzell, Inc.
Steele's Warehouse
Montana Broom and Brush CO.
Browns Auto Parts
Truzzolino Food Products Company
Shamrock Motors
Don's Office Machine Company
Downey Drug
Woolworth
Lyons Motors
Lee's Office Equipment & Supplies
Weber's Paramount Beauty Supply, Inc.
Montana Leather Company
Butte Silver Bow Chamber of Commerce
Morris Marketing Company
ANR Freight Systems
Barbara J. Casheel
Ossello's
Anthony J. Mufich
H. B. Brinck & Associates
William B. Persanti, Jr.
Town Pump, Inc.
Wesco
Lyons Motors
Steele's
Roach & Smith
Woolworth
Maydwell & Hartzell, Inc.
Christie Transfer & Storage Company
S. J. Perry & Company, Inc.
W. R. Tait

BUTTE, CONT....
Montana Broom & Brush Company
Silver Bow Chamber of Commerce
Shamrock Motors
Miller's
Port of Montana
Red Boot Ranch
Ted Schenk
Stanley L. Urish
Don's Office Machine Company
Whalen Tire
Downey Drug
Paramount Beauty Supply, Inc.
Truzzolino Foods Products Company
Montana Leather Company
William J. Suydam
Charles Jackson
Fred Toplarski
Lee's Office Equipment
Colleen C. Berger
Catherine M. Cashell
James D. McPherson

CONRAD

P. J. Anderson & Sons

DILLON

Mark Bola
Albert H. Cox

GREAT FALLS

H C L Equipment Incorporated
Gagnon's Reprographics
Bekins
Snapshot Photo Centers & Dealers
Great Falls Truck Center
Lui Salina - Trader
Smith Equipment Company
TII - Terrex Industries Inc.
Termal Supply Inc.
Tire-Rama
Uni-Quip, Inc.
Vemco Inc.
W E - Wolbur * Ellis Company
World Wide Press, Inc.
Warden Paper Inc.
Anderson Steel Supply, Inc.
American Music Company
Consolidated Electrical Distributors, Inc.

GREAT FALLS, Cont...

Eklund's Appliance & TV
Falls Chemicals Inc.
The Falls Supply Company
Gus & Jack's - The Tire Guys
Great Falls Paper Company
Hansen-Kinney Company - Wholesale Distributors
Hawk Electric and Plumbing Supply, Inc.
Hoglund's - Work & Western Wear
Interstate Brands Corporation
Johnson Distributing
Mountain Bell
Montana Plumbing Supply Company
Milford A. Palmer Automative Parts
Metco Kenworth Inc.
Airwick Professional Products of Montana
Cummins Power, Inc.
Tractor & Equipment Company
Carl Weissman & Sons
Advanced Litho Printing
Anderson Steel Supply, Inc.
Bearing Sales
Novco
Taylor Bros. Inc.
Great Falls Coca-Cola Bottling Co.
Moderne Cabinet Shot
Smith Equipment Company
H - W Distributors Inc.
Jako Distributing
Jerry Noble Tires
Cereal Food Processors
Chief Distributors
Fasteners Inc.
Malisani, Inc.
Auto World
Cory Paint Store
Big R Supply
Northwest Veterinary Supply Company
Great Falls Auto Parts
Auto Parts, Inc.
Central Glass & Paint
Taylor Brothers, Inc.
Western Equipment
Walco International
Penningtons, Inc.
Bennett Motors
Hines Motors
Fire Appliance & Supply
Falls Sheet Metal
A. A. Printers
Poulsons, Inc.
Wally's Over Door

GREAT FALLS, CONT....

Roseth Oil
Talcott Builders Company
Pacific Hide & Fur
Crescent Electric
Central Floor Covering
Great Falls Coca Cola Company
Spartan Super Auto
Spartan Honda
Eagle Athletic, Inc.
Robinson Insulation Company
Howard Lumber Yard Supply Company
Gerber Industries
North West Wheel
Pay N Save
Gomers
Wholesale Floor
Associated Business Systems
C. D. Distributing, Inc.
McIntosh Grain & Feed, Inc.
Central Equipment Company
Ryans
Buttrey Food
Harvest States Cooperatives
Suhr Transport
Fleet Wholesale Supply

HELENA
Grimes Buick-GMC-Honda-Cadillac-Isuzu
Cresecent Electric Company
Clover Leaf Dairy
Smitty's Fireplace Shop
Consturction Specialties, Inc.
Placer Motors, Inc.
Valley Motor Supply
Central Parts Company
ANR Freight System
McKelvey Paint & Decorating, Inc.
Columbia Paint Company
The Carpet Gallery
American Chemet Corporation
Drug Fair No. 9
Capital City Tire & Service Center
Neill Avenue Tire Company
Champion Auto Stores
Capital Ford Sales, Inc.
Sheehan's of Helena
Associated Food Stores, Inc.
State Publishing Company
Helena Industries, Inc.
Onyx International

KALISPELL

Industrial Supply
Spring Creek Forest Products, Inc.
Northwest Machinery, Inc.
Ewing's Appliances & Furniture
Rainbow Paints
Consolidated Electrical Distributors, Inc.
Columbia Paint Company
Stewart Carpets
Kalispell Auto Parts
Valley Glass, Inc.
KALISPELL, CONT...

Kalispell News Agency
Wheaton's Cycle & Toy
Janitor's World
Biby - Carpet & Floor Covering

LINCOLN

Dick Lundbery

MISSOULA

ANR Freight System-Timothy Hosking
ANR Freight System-James A. Schleder
Diversified Plastics, Inc.
Carpenter Paper Company
Lanham Heating & Air Conditioning

TOWNSEND

National Bark Sales

OUT OF STATE

Cyprus Industrial Mineral Company - Englewood, Colorado
T C F - Twin City Freight - St. Paul, Minnesota
Cyprus Industrial Minerals Company-Englewood, Colorado

MISCELLENOUS

Morris Marketell CO.
Montana Retail Association
Montana Chamber of Commerce
Montana Beer Wholesalers

CRASH INVOLVEMENT OF LARGE TRUCKS BY CONFIGURATION: A CASE-CONTROL STUDY

Howard S. Stein
Ian S. Jones

January 1987

Insurance Institute for Highway Safety
Watergate 600, Suite 300
Washington, DC 20037

This work was supported by the Insurance Institute for Highway Safety.

ACKNOWLEDGEMENTS

The authors would like to thank Chief George Tellevik and Captain David Boyd of the Washington State Patrol for their support and enthusiasm throughout the project. We are also indebted to Officer John Balcom for his advise in the early stages and to Officer Linda Wilson for coordinating data collection throughout the project. Our thanks to all the officers of the Washington State Patrol for their conscientious and expert collection of the truck inspection data.

The authors also are indebted to the following members of the Institute staff for their help and support: Beth Kelly, Dr. Paul Zador, Dr. Jessica Pollner, Sharon J. Rasmussen, and Karen Barnes.

DEDICATION

This paper is dedicated to the memory of the late Dr. William Haddon, Jr, M.D. Dr. Haddon was a pioneer in the field of injury control and used the case-control approach to study the contribution of alcohol to motor vehicle crash losses. Dr. Haddon was involved in the early stages of this project, and we feel he would be particularly pleased with our application of this technique to study the factors involved in truck crashes. We regret that he was unable to see this study through to its completion.

ABSTRACT

Crashes involving large trucks are a major and increasing problem on U.S. highways. For a two-year period large truck crashes on the interstate system in Washington State were investigated using a case-control method. For each large truck involved in a crash, three trucks were randomly selected for inspection from the traffic stream at the same time and place as the crash but one week later. The effects of truck and driver characteristics on crashes were assessed by comparing their relative frequency among the crash-involved and comparison sample trucks. Double trailer trucks were consistently overinvolved in crashes by a factor of two to three in both single and multiple vehicle crashes. Single unit trucks pulling trailers were also overinvolved. Doubles also had a higher frequency of jackknifing compared to tractor-trailers. The substantial overinvolvement of doubles in crashes was found regardless of driver age, hours of driving, cargo weight, or type of fleet. Younger drivers, long hours of driving, and operating empty trucks were also associated with higher crash involvement. The results clearly show that, despite their greater load carrying capacity, increasing use of doubles will produce more large truck crashes.

Large trucks (10,000 lbs. gross vehicle weight or greater) are a major safety problem on the nation's highways.[1,2] They are involved in about 6 percent of all police reported crashes but account for 12 percent of all fatal crashes.[3] Each year, about 4,800 people die in truck crashes, and almost 75 percent of these fatalities are to people in a vehicle other than the truck.[4] Trucks are overrepresented in severe crashes, but on a per mile basis trucks appear to have fewer crashes than cars because they travel predominantly on interstate highways, which are low risk roads.[1] However, when car and truck crashes are compared on similar roads, trucks have higher crash rates.[5] In recent years, both the number of crashes and the percentage of fatal crashes involving large trucks have been increasing.[6,7]

Although the involvement of large trucks in crashes has been extensively studied, little is known about the relative involvement of different truck configurations or the role played by factors such as load, type of cargo, or driver characteristics.[1,3] The influence of truck size, configuration, and weight have become important issues because the 1982 Surface Transportation Act authorized the use of heavier, wider, and longer trucks and permitted double trailer truck combinations to operate, on certain roads, in every state. Prior to the Act, 14 states had prohibited double trailers.[8] The relative safety of double trailers has been an issue for some time; however, most studies

that attempted to compare the crash rates of different truck configurations have used mileage estimates as measures of exposure to risk and were unable to adjust these estimates for the variation in travel patterns among different truck configurations. Because of these differences, the crash rates computed in many studies for doubles and tractor-trailers were not readily comparable.[9] The most reliable studies with more comparable exposure measures concluded that doubles had higher crash involvement rates than tractor-trailers.[4,10,11]

The finding that doubles have higher crash rates than tractor-trailers when their exposure is similar is not surprising. The potential problems in operating doubles are well documented in truck handling studies.[12,13] These studies reported significant handling problems related to the inherent instability of a second trailer. Relatively small tractor steering movements (e.g., in a lane change maneuver) are magnified by the second trailer and can reach unmanageable levels, producing exaggerated sway and subsequent rollover of the rearmost trailer. The same steering maneuvers do not produce rollover in tractor-trailers. The increased trailer sway and rollover potential of doubles is also evident in crash data that indicate significantly higher proportions of rollover in fatal crashes involving double or triple combination vehicles.[14] Poor handling and stability were also reported in several driving studies and surveys of drivers,[15,16,17] which all concluded that driving doubles requires greater alertness and concentration than driving singles.

Although there is considerable evidence to suggest that doubles are less safe than tractor-trailers, there has been no reliable estimate of their overinvolvement in crashes relative to other truck configurations that is based on comparable exposure measures. Because doubles carry more volume than tractor-trailers, fewer are needed to transport a given amount of freight, and it has been claimed that this greater carrying capacity more than compensates for their potential overinvolvement in crashes.[8] However, if the involvement of doubles is much greater than their cargo advantage, this claim would have no merit and the increased use of doubles would lead to increased highway deaths and injuries.

Any analysis of the relative crash involvement of different truck configurations must be able to take account of their different operating environments. For example, traditionally doubles are used on longer trips, travel more at night, are more likely to have been fully loaded, and they have been used predominately in western states.[8] Other factors such as driver characteristics also may vary among truck types. A research approach that can compenstate for differences in exposure is the case-control method commonly used in epidemiology.[18] This method compares a case (crash) sample with a control (or comparison) sample, which has the same or very similar exposure as the crash sample. In highway safety applications, the method typically involves returning to crash locations at the same time of day and day of week as the crash, but one week later, to collect comparison sample information. The present study was designed to compare the vehicle and driver factors of large trucks involved in crashes with those of a comparison group on the interstate highway system in Washington State.

METHOD

Washington State has allowed a diversity of truck configurations including western doubles, Rocky Mountain doubles, and truck-trailers as well as tractor-trailers, tractors (bobtails), and single unit trucks to operate on all its roads (see Figure 1) for more than 25 years. The state provides a wide variety of climate and terrain ranging from the temperate coastal region through the Cascade Mountains to the desert areas in the eastern part of the state. The study was conducted primarily on Interstate 5, which carries north-south traffic, and Interstate 90, which has east-west traffic. The data were collected over a two-year period from June 1984 through July 1986.

Truck data were collected by the Commercial Vehicle Enforcement Section (CVES) of the Washington State Patrol. Approximately 100 officers are responsible for the weight enforcement and inspection programs in the state, which includes weigh stations on interstates and other major routes as well as port-of-entry weigh scales. The officers conduct detailed inspections of truck equipment including brakes, steering, tires, and other major systems. They also provide assistance to the State Patrol in the investigation of truck crashes. Truck inspections followed the procedures detailed by the Commercial Vehicle Safety Alliance (CVSA) and the National Uniform Driver-Vehicle Inspection Manual.[19]

Study Design

In this application of the case-control method, for each crash involved truck, three trucks were selected and inspected at the crash

site at the same time of the day of the crash but one week later. Thus, a case sample of crash-involved trucks and a control (comparison) sample matched for roadway, time of day, and day of week were established. The study included all crashes involving trucks with gross vehicle weight rating (GVWR) greater than 10,000 pounds that occurred on the interstate highway system and involved property damage of at least $1,500 or personal injury. Each crash-involved truck was inspected by a CVES officer to check the condition of the major truck components including brakes, steering, and tires. Where possible, quantitative measures of performance were used: for example, brake adjustment was measured from push rod travel and tire condition from the tread depth. Truck weight, size, and configuration; driver age and experience; and the type of trip were also recorded.

One week after each crash, the CVES officers conducted a random roadside truck inspection at the crash location. For every crash involved truck, three trucks were selected for the comparison sample: one approximately 30 minutes before the time of the crash, one at the time of the crash, and one 30 minutes later. The only criterion for selection of comparison sample trucks was that they have a gross vehicle weight rating of 10,000 pounds or greater. Because of safety and convenience considerations, the inspection site was usually at the next interchange, weigh scale, or rest area. Each comparison truck selected was inspected following the same procedures used for the crash-involved trucks. If the inspection was at the roadside, truck weights were obtained using portable scales or estimated from shipping papers. The inspection was typically completed within 30 minutes, which allowed the officers to select the next truck at the appropriate time.

This sampling procedure could not always be followed; some crash locations did not have sufficient area at the roadside to conduct an inspection or a convenient alternate site before the next interchange. In these cases, the inspection site was moved to an appropriate location as near the crash site as possible, and the inspecting officers confirmed that the selected truck had passed the crash location. Because of very severe weather or because the officers were investigating other crashes, a few of the comparison sample inspections were conducted two or three weeks after the original crash. In addition, a few comparison inspections were omitted because the crash had occurred in congested areas (e.g., downtown Seattle), where it was not possible to apply the sampling procedure satisfactorily. Crashes that occurred on ramps were not analyzed in this paper because of the difficulty and hazards of selecting comparison trucks. The study analyzed 676 crashes involving 734 large trucks that occurred between June 1984 and July 1986. Almost 85 percent of the crash involved trucks were successfully matched with sample trucks, and only these cases were used in the subsequent analyses of relative involvement.

Data Analysis

Truck configurations were classified as shown in Figure 1. Western doubles were defined as a tractor with two trailer units with the first trailer 35 feet or less in length; nearly all had two 28 foot trailers. Rocky Mountain doubles were tractors hauling two trailers with the first trailer greater than 35 feet in length; the majority had a first trailer

of 40 feet with second trailers of various lengths. The variables used in these analyses included truck configuration, age of driver, weight of load, hours of driving, truck body type, and fleet size. Variables with continuous ranges, such as driver age or hours of driving, were classified into three groups of equal size (i.e., low, medium, and high) based on the comparison sample. If a variable of interest was unknown for a crash-involved truck, then both crash and comparison trucks were excluded from the particular analysis. In the small number of cases (typically three percent or less) where the value of a variable for one of the comparison trucks was unknown, a representative value was randomly assigned based on the distribution of this variable by truck configuration in the rest of the comparison sample.

Categorical data analysis by linear models was used to examine the effects and interactions of the separate factors.[20] For example, this method enables factors related to truck configuration to be separated from those related to driver age. Without such a separation, it would be difficult to determine whether the overinvolvement of a particular configuration was due to the truck configuration or to the driver. To determine whether particular factors were overinvolved in the crash vehicles, contingency tables were constructed using the crash and comparison samples. The chi-square statistic for the homogeneity of proportions in contingency tables was used to test for significance. With this method, testing for the effect of a single factor, such as truck configuration, is equivalent to a test of independence in a two-way contingency table of trucks by crash and comparison group and the single factor. When testing for the effects of two factors, such as truck

configuration and driver age, the crash sample was compared to the comparison sample in terms of the two factors and an interaction term. If the interaction was not statistically significant, the term was omitted and the effect of the individual factors estimated independently. The statistical analyses were performed using the CATMOD procedure of the SAS Institute.[21]

Analyses were also performed stratifying the data by the study design parameters, which included crash type (single vehicle or multiple vehicle), day/night, route, and roadway alignment. In these analyses, the comparison sample was adjusted to include only those inspections corresponding to the specific subset under study. For example, in analyzing the involvement of trucks in single vehicle crashes, the comparison sample included only those trucks sampled to match trucks involved in single vehicle crashes.

The contingency table analyses identified those factors that were significantly related to crash involvement. However, to present the effect of particular factors on crash involvement, involvement ratios were computed by dividing the percentage of trucks with that particular characteristic in the crash group by the percentage of trucks with the same characteristics in the comparison group. Confidence intervals were computed for these ratios. An involvement ratio greater than 1.0 indicated that the particular factor was overinvolved in the crash sample and an involvement ratio of less than 1.0 indicated it was underinvolved.

With a case-control study of this type it is only possible to compute relative involvements, which cannot be converted into crash rates. Consequently, these results cannot be directly compared to other studies that compute crash involvement rates on a per miles traveled

basis. Also, because the crash-involved trucks were compared with randomly sampled trucks, if one value of a variable (for example, a particular truck configuration) is overrepresented in the crash sample, other values of the same variable must be underrepresented. By definition, every overinvolvement in the crash sample must be balanced by underinvolvement. Thus overinvolvements or underinvolvements are relative to the overall involvement of large trucks in crashes on the interstate highway system. Consequently, the results from this study cannot be compared directly with the crash involvement rates of other vehicles.

RESULTS

Truck Configuration

Table 1 provides an overview of the data sets that were analyzed, and it shows the distributions of the crash involved trucks and comparison sample trucks by configuration. Tractor-trailers were involved in 59 percent all of crashes, doubles (including Western and Rocky Mountain doubles) in 21 percent, truck-trailers in 9 percent, and single unit trucks 8 percent. The corresponding figures for the comparison sample are 59 percent tractor-trailers, 7 percent doubles, 5 percent truck-trailers, and 23 percent single unit trucks. Thus, among large trucks the crash experience of tractor-trailers parallels their exposure on the road, whereas doubles and truck-trailers are significantly overrepresented in the crash sample and single unit trucks are underrepresented.

A simple way to illustrate relative involvement of particular configurations is to use the involvement ratio (the percentage of crash involved trucks divided by the corresponding percentage of comparison sample trucks). Involvement ratios by truck configuration are given in Figures 2 and 3 for all single vehicle and multiple vehicle crashes, respectively. Compared to tractor-trailers, doubles were significantly overinvolved in both types of crashes ($p \leq 0.001$), although their overinvolvement was greatest in single vehicle crashes.

Although truck configuration plays a major role, crash involvement is affected by other factors. The factors of interest were separated into three major categories: truck operating characteristics (load, fleet size), driver characteristics (age, hours of service), and environmental/road conditions (day/night, curve/grade). These various factors were analyzed in conjunction with truck configuration and the results are presented in Figures 4-7. Although many other factors significantly affected crash involvement, truck configuration was the dominant effect and the other factors, in general, had less effect. Note that although all truck configurations were analyzed, only the results for the three configurations with the largest samples -- single unit trucks, tractor-trailers, and doubles (Western and Rocky Mountain) -- are presented.

Truck Operating Characteristics: Body Type, Load, and Fleet Size

Figure 4 gives crash involvement by truck configuration and load. The load is expressed as a percentage of the truck's GVWR. For all truck configurations combined, crash involvement varied significantly by load

($p \leq 0.01$). Compared to fully loaded trucks, empty trucks were overinvolved in crashes and partially loaded trucks were underinvolved. Load did not appear to have as large an effect for single unit trucks or tractor-trailers as for doubles. Doubles were overinvolved in all crashes, but empty doubles were more involved than partially or fully loaded doubles. An analysis of crash involvement by truck body type (i.e., van trailers, flatbeds, tankers, etc.) showed that no one particular body type was consistently overinvolved or underinvolved.

Figure 5 gives crash involvement for trucks as a function of fleet size. Fleet size was not related to the crash involvement of tractor-trailers, but there was a trend of increasing involvement with decreasing fleet size for doubles and single unit trucks. However, irrespective of fleet size, doubles were always significantly overinvolved in crashes.

Driver Characteristics: Age and Hours of Driving

Figure 6 gives the effect of driver age as a function of truck configuration. Compared to older drivers, young drivers are significantly overinvolved in crashes independent of truck configuration ($p \leq 0.001$). Just as important, the figure also shows that doubles are overinvolved in crashes irrespective of the ages of their drivers.

Figure 7 shows the effect of hours of driving on crash involvement. Drivers with six or more hours driving prior to their crash were more involved in crashes than those with fewer hours. Single unit

trucks and tractor-trailers were less affected by driving hours than were doubles. Doubles showed an overinvolvement that increased steadily as the number of driving hours increased. There was a particularly high crash involvement if the doubles' driver had been driving six or more hours. A separate analysis of hours of driving by crash type showed a stronger relationship between hours of driving and overinvolvement in multiple vehicle crashes ($p \leq 0.03$).

Environmental and Road Conditions

The involvement ratios for day and nighttime crashes as a function of truck configuration are shown in Table 2. Doubles were overinvolved in crashes compared to tractor-trailers, but for all configurations nighttime involvement ratios were generally lower than daytime ratios.

Crash involvement of the various configurations was also analyzed by roadway alignment to see whether involvement increased on curves or grades. Table 2 shows that the involvement ratios for single unit trucks and doubles were greater on curves or grades than straight level roads but that the involvement ratios for tractor-trailers were lower on curves or grades.

Table 2 also compares crash involvement on Interstate 5 and Interstate 90. The crash involvement ratios were comparable on the two routes. These ratios confirm the basic finding that single unit trucks were underinvolved, and doubles were overinvolved in crashes relative to tractor-trailers, regardless of route.

Trailer Stability: Rollover, Jackknifing, and Trailer Separation

Table 3 gives the frequency of rollover and jackknifing in single vehicle and multiple vehicle crashes as a function of truck configuration. Doubles were involved in a higher proportion of single vehicle crashes (49 percent) compared with tractor-trailers (30 percent). An obvious question is whether this occurred because the doubles configuration with the two trailers is more prone to rollover or jackknifing than the tractor-trailer combination with one trailer. The proportion of rollover in single vehicle crashes was the same for doubles and tractor-trailers (about 45 percent), but it was significantly higher for truck-trailers and single unit trucks. The risk of injury was higher when rollover occurred; 49 percent of single vehicle crashes with rollover involved injury compared to 33 percent without rollover. In multiple vehicle crashes truck-trailers, single unit trucks, and doubles all had a higher frequency of rollover than tractor-trailers.

Jackknifing of doubles occurred frequently in both single vehicle crashes (75 percent) and multiple vehicle crashes (37 percent). Truck-trailers jackknifed less frequently than doubles but more than tractor-trailers. In single vehicle crashes, jackknifing was almost twice as frequent on wet roads as on dry roads.

Table 3 also gives the frequency of trailer separation following a crash. Separation of units occurred in nearly 40 percent of single vehicle crashes involving doubles and in 12 percent of their multiple vehicle crashes; it was almost as frequent for truck-trailer crashes. Trailer separation generally occurred as a result of the crash although there were some cases reported where the separation of the second trailer precipitated the crash. Trailer separation was rare for tractor-trailers.

DISCUSSION

The results of this study show that, compared to their numbers on the highway, double configuration trucks are two to three times more likely to be in crashes than are tractor-trailers. Doubles were consistently overinvolved regardless of other truck operating characteristics, driver characteristics, or roadway conditions. They were significantly overinvolved in both single vehicle and multiple vehicle crashes compared to tractor-trailers, but their overinvolvement was greatest in single vehicle crashes. In addition, this study found that crashes of doubles are much more likely to involve jackknifing than crashes of tractor-trailers.

Previous studies have documented the inherent stability problems of double trailer configurations.[12,13,15] The findings of this study suggest that trailer instability is one of the causes of the overinvolvement of doubles in crashes. Truck-trailers, which have one articulation point less than doubles, were still significantly overinvolved in crashes but less so than doubles. Similarly, tractor-trailers* had a lower involvement than truck-trailers but were more involved in crashes than single unit trucks. The high crash involvement of empty doubles may reflect the fact that when doubles are lightly loaded sway problems are worse and their braking performance is also reduced.[8,16,22] Doubles were particularly overinvolved on curves

*Tractor-trailers and truck-trailers both have one articulation point, but the fifth wheel connection of a tractor-trailer has more roll and yaw stability than the pintle hook arrangement of a truck-trailer.

and grades, which, again, most likely reflects their stability problems. Doubles also jackknifed more frequently than tractor-trailers, although it could not be determined whether this was the cause or result of the crash.

Although the proportion of rollover in single vehicle crashes was similar for doubles and tractor-trailers, the frequency of doubles in single vehicle crashes and thus their rollover frequency was much higher than for tractor-trailers. It was not possible to determine whether the high single vehicle crash involvement was the result of a tendency of the second trailer to rollover or whether rollover was the result of a loss of control crash. In nearly 40 percent of single vehicle crashes involving doubles, trailer separation occurred. This high proportion of trailer separation has been noted by other researchers.[23]

The overall crash involvement ratio of young drivers was higher than for older drivers, but the age effect was independent of truck configuration. Irrespective of age, drivers of doubles had a higher crash involvement ratio. This finding confirms the conclusions of driver surveys that drivers have more difficulty handling doubles than tractor-trailers.[8,17] Drivers of doubles who had been driving for six or more hours were more overinvolved in crashes than other configurations suggesting that the handling difficulties of doubles become more of a problem as the driver gets tired. Large fleet operators contend that the attention they pay to maintenance, safety, and using their most qualified drivers on doubles overcomes these problems.[8] Unfortunately, the results show that, although doubles in larger fleets have lower crash

involvement than those in small fleets, their crash involvement is still more than twice that of tractor-trailers.

This study has shown that doubles have a much higher crash frequency than other truck configurations. However, a net benefit might be realized if this increase in crash frequency could be offset by substantial decreases in truck traffic because doubles' greater cargo carrying capacity reduces total truck mileage. The National Research Council study of double trailers estimated that their increased use would reduce combination truck mileage by about 10 percent.[8] This reduction in mileage clearly does not compensate for the up to threefold increase in crash involvement of doubles over tractor-trailers.

The strength of the current results stems from the study design, which compared different truck configurations operating under similar conditions; this comparison is extremely difficult using conventional mileage-based methods. For example, a recent study used Fatal Accident Reporting System, Bureau of Motor Carrier Safety, and Truck Inventory and Use Survey data to compute accident rates per 100 million miles of travel.[24] Unfortunately, this study suffers from the same data and method limitations as previous studies -- rates for doubles and singles were not compared under similar conditions. The study concluded that overall crash involvement rates of the two configurations were similar but that 70 percent of doubles crashes were on divided roads compared to 52 percent of tractor-trailer crashes. However, the authors noted that per mile crash rates are substantially lower on divided highways, thus "the accident picture is not quite as favorable to the current doubles as appears at first glance, since the doubles chiefly travel on relatively safe divided highways."

Although doubles have been operated in Washington State for more than 25 years, their crash involvement is much higher than that of other truck configurations. When the crash involvement of doubles was compared to that of tractor-trailers operating under similar conditions, doubles were involved in crashes two to three times more often. If the use of doubles becomes more widespread throughout the interstate highway system and connecting roads, an inevitable result will be increased numbers of truck crashes.

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Table 1

Distribution of Crash-Involved Trucks and Control Sample Trucks by Configuration and Crash Type

Crash Type	Distribution of Truck Configurations (Percent)						Total* Number of Trucks
	Single Unit	Tractor Only	Tractor-Trailer	Truck-Trailer	Western Double	Rocky Mountain Double	
All Crashes							
Crash Involved	8	4	59	9	18	3	604
Comparison Sample	23	5	59	5	6	1	1,812
Single Vehicle							
Crash Involved	9	3	52	9	25	3	222
Comparison Sample	21	5	62	4	8	1	666
All Multiple Vehicle							
Crash Involved	8	4	62	9	14	2	382
Comparison Sample	25	5	57	6	5	1	1,146
Rear End**							
Crash Involved	9	8	64	7	13	1	104
Comparison Sample	24	8	51	8	7	1	312
Sideswipe**							
Crash Involved	7	4	67	8	14	1	108
Comparison Sample	27	4	59	6	3	1	324

*Some totals do not equal 100 percent due to rounding

**Truck struck other vehicle

Table 2

Truck Configuration Crash Involvement Ratios by Time of Day, Highway, and Roadway Alignment

Factor	Single Vehicle Crashes			Multiple Vehicle Crashes		
	Single Units	Tractor Trailer	Doubles	Single Units	Tractor Trailer	Doubles
Time of Day						
Day	0.6*	0.8	4.9*	0.4*	1.1	2.9*
Night	0.2*	0.9	2.5*	0.2*	1.0	2.0*
Roadway Alignment						
Straight/level	0.3*	1.0	2.8*	0.3*	1.2	2.4*
Curve/Grade	0.6*	0.8*	3.3*	0.4*	1.0	2.9*
Interstate Route						
5	0.5*	0.9	2.5*	0.4*	1.1	2.6*
90	0.2*	0.7*	3.8*	0.4*	0.9	2.5*

*Significantly different from 1.0 at $p \leq 0.05$ level.

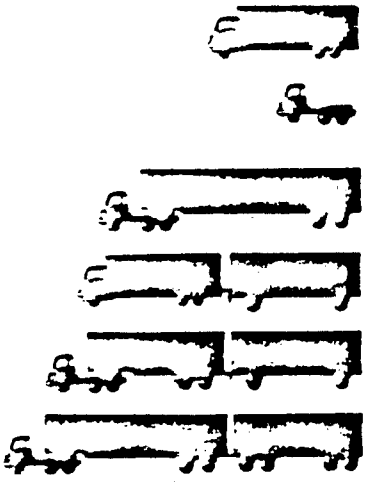
Table 3

Frequency of Rollover, Jackknifing and Trailer Separation in Single Vehicle and Multiple Vehicle Crashes by Truck Configuration

	Percentage of Single Vehicle Crashes* Involving				Percentage of Multiple Vehicle Crashes* Involving			
Truck Configuration	Rollover	Jackknife	Separation of Units	Number of Trucks	Rollover	Jackknife	Separation of Units	Number of Trucks
Single Unit	73	-	-	22	12	-	-	41
Tractor-trailer	43	51	0	129	5	18	2	308
All Doubles	46	75	39	69	11	27	12	73
Truck-Trailer	81	67	29	21	15	24	11	46

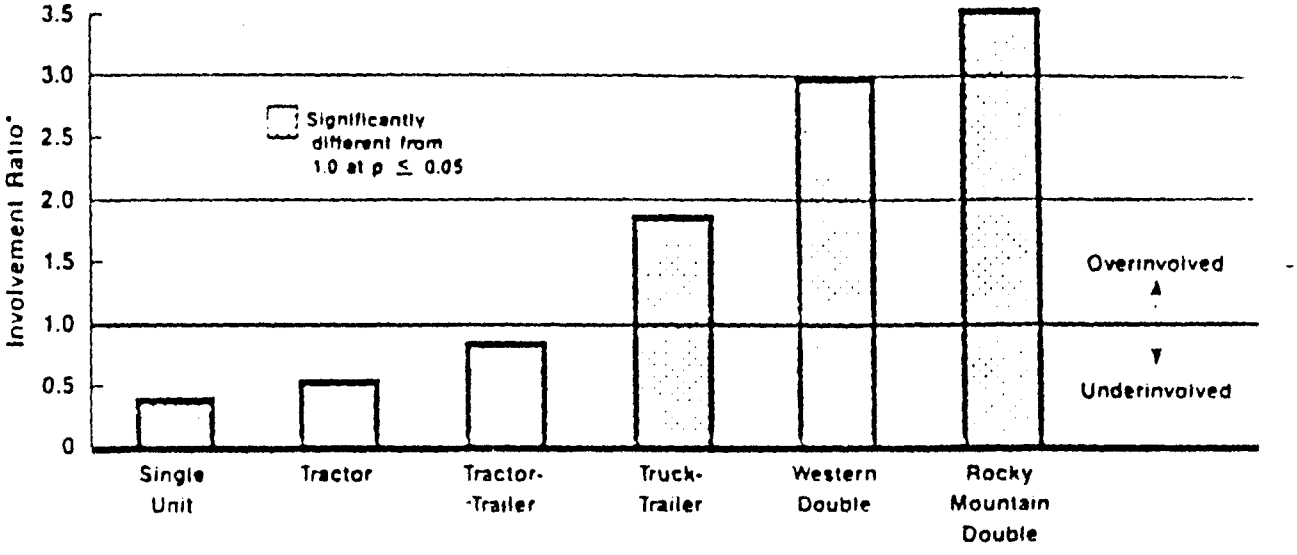
*More than one crash event may have occurred for a specific crash involved truck.

Figure 1: Truck Configurations



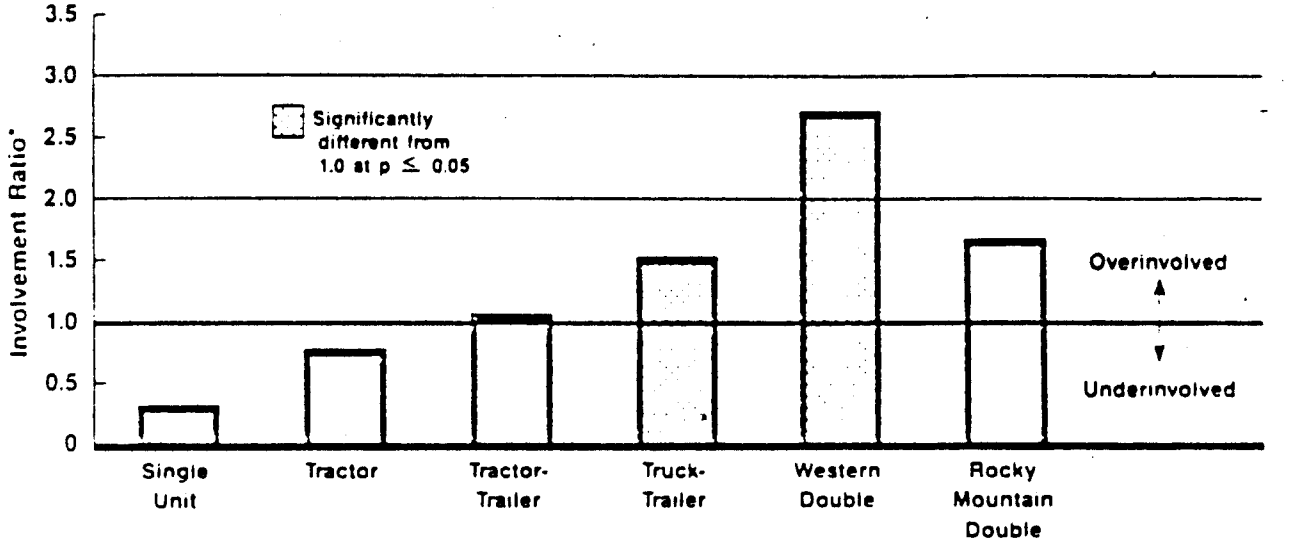
- SINGLE UNIT TRUCK
- TRACTOR
- TRACTOR-TRAILER
- TRUCK-TRAILER
- WESTERN DOUBLE
- ROCKY MOUNTAIN DOUBLE

Figure 2: Involvement of Trucks in Single Vehicle Crashes by Truck Configuration



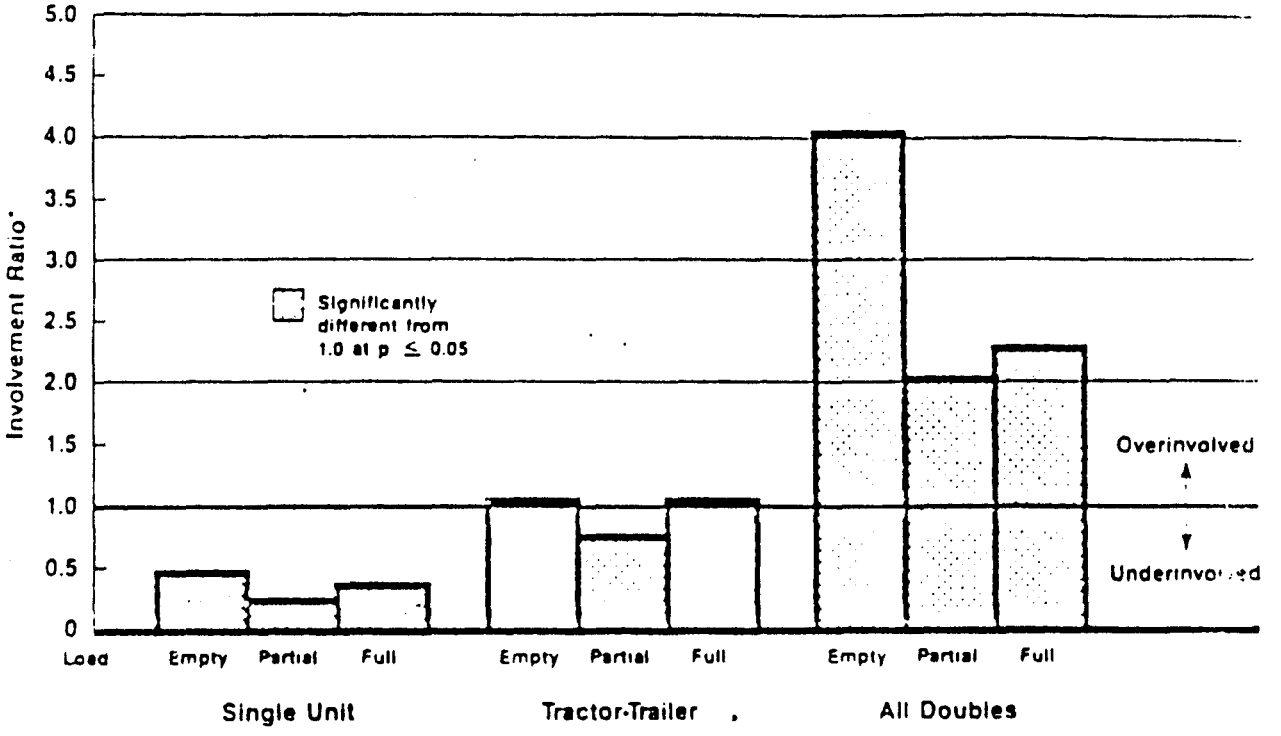
*Ratio of truck crash involvement percentage to comparison sample percentage.

Figure 3: Involvement of Trucks in Multiple Vehicle Crashes by Truck Configuration



*Ratio of truck crash involvement percentage to comparison sample percentage.

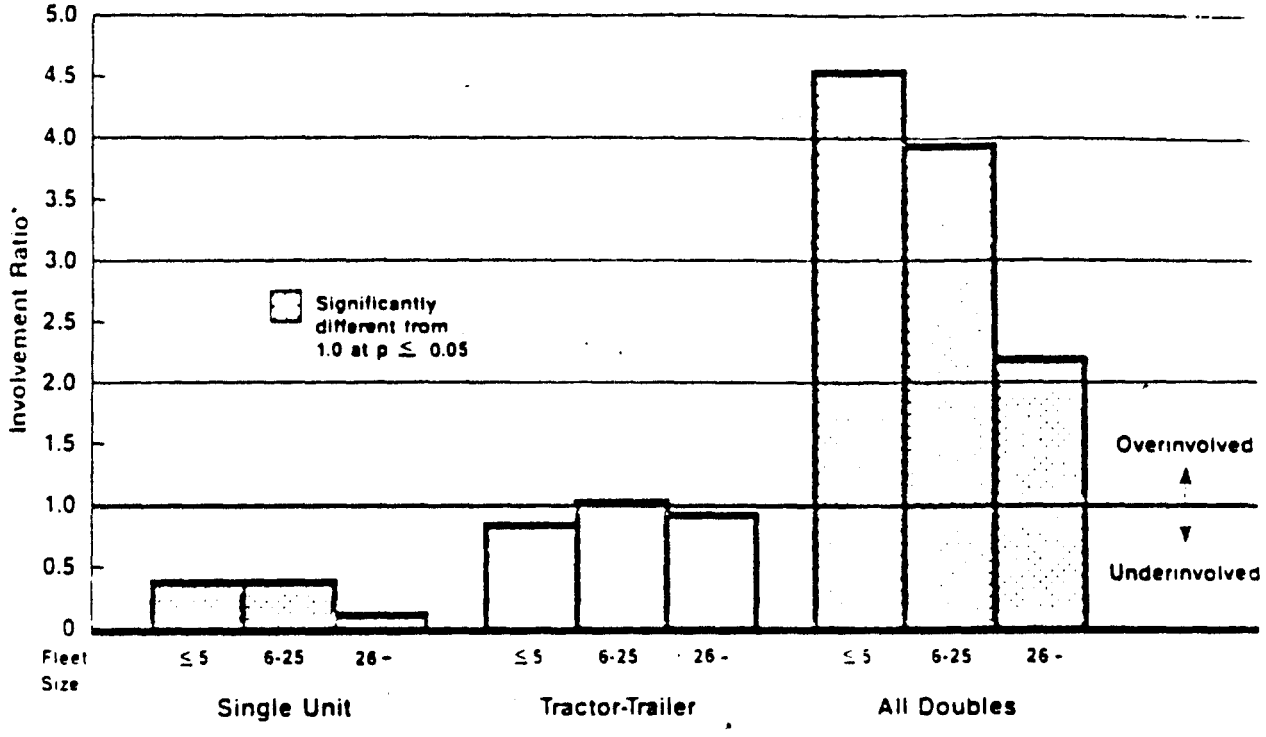
Figure 4: Involvement of Trucks in Crashes by Truck Configuration and Load



Empty = ≤ 25% GVWR; Partial = 26-90% GVWR; Full = ≥ 91% GVWR.

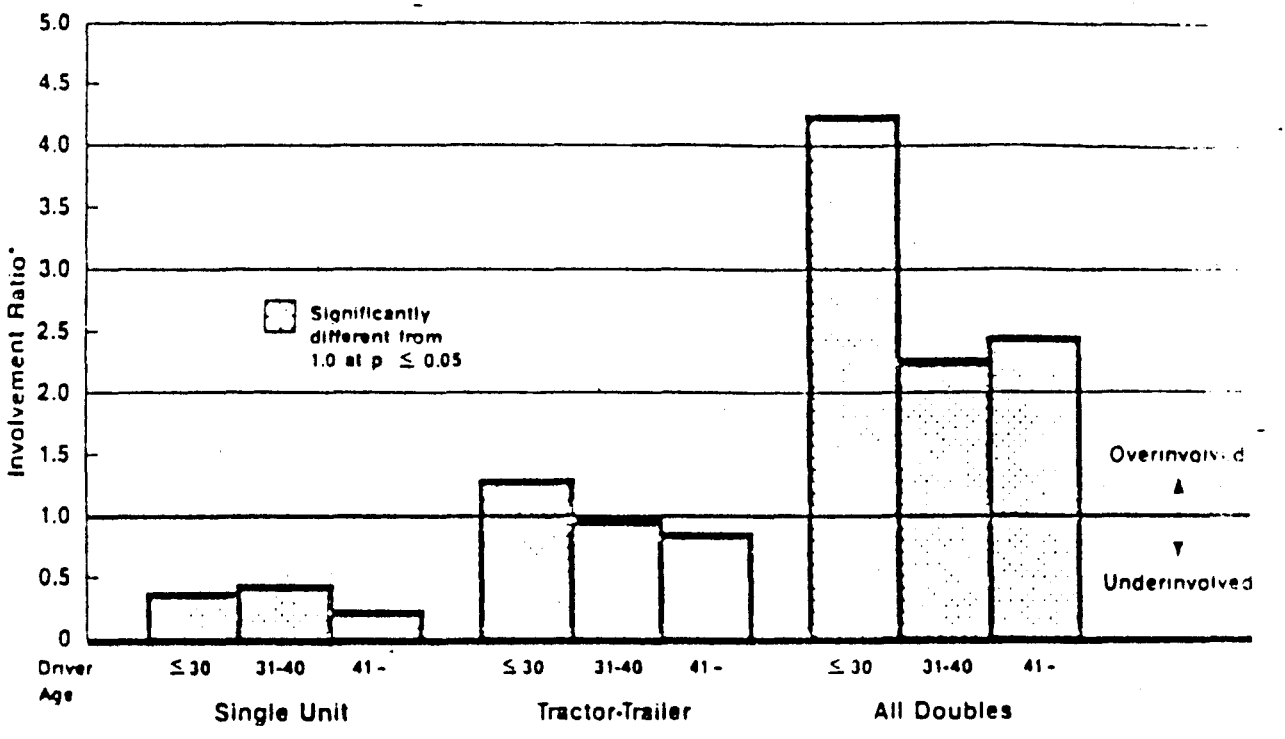
*Ratio of truck crash involvement percentage to comparison sample percentage.

Figure 5: Involvement of Trucks in Crashes by Truck Configuration and Fleet Size



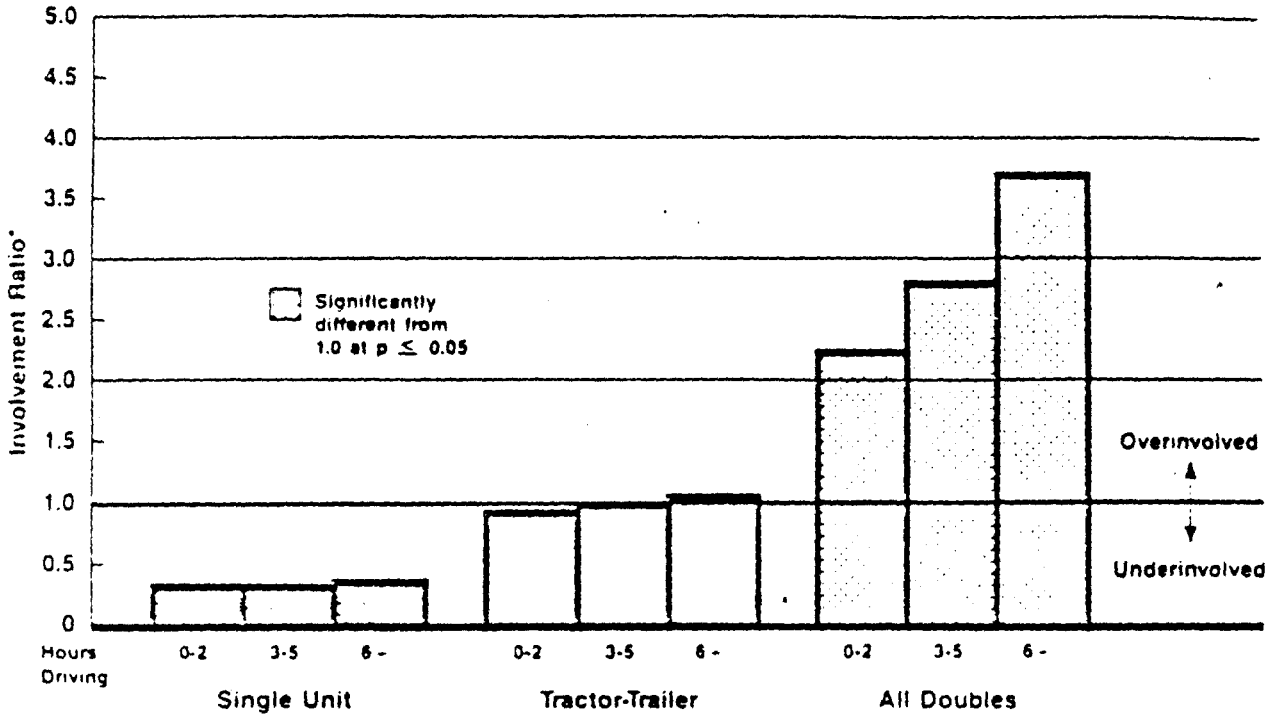
*Ratio of truck crash involvement percentage to comparison sample percentage.

Figure 6: Involvement of Trucks in Crashes by
Truck Configuration and Driver Age



*Ratio of truck crash involvement percentage to comparison sample percentage.

Figure 7: Involvement of Trucks in Crashes by Truck Configuration and Hours Driving



*Ratio of truck crash involvement percentage to comparison sample percentage.

MINERAL INDEPENDENT

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FOUR 18-WHEELERS, all wrecked in the past week on I-90's 'bobsled run' near mile marker 25, lined up at Schober's in St. Regis. John Schober stands in the center of the picture, viewing the wreckage.

DAW strike vote taken

by Steve Pike
News Editor

Mineral County is waiting impatiently — and apprehensively — for the results of a union vote taken in Superior Aug. 24.

A letter mailed Aug. 20 from DAW management to members of International Woodsworkers of America Local 3-249, representing hourly workers at the company's lumbermill near Superior, announced the implementation of DAW's last contract offer calling for a reduction in pay and benefits to workers.

Implementation, originally scheduled for Aug. 25, has been delayed until results of the vote on the offer by IWA workers at Superior and four other affected mills in Montana, Idaho and Oregon are tallied at IWA's regional headquarters in Portland, Ore. The results should be known sometime Wednesday.

Rejection of the pact by the 900 affected workers will mean the IWA will strike the five lumber mills and picket lines may be set up by Thursday morning, according to union officials.

The move by DAW took both IWA members and the community in general by suprise.

The facility had been operating under terms of the former contract, which expired June 30, and, from appearances, both company and union were waiting for action to be taken by other lumbermills and their unions.

"We've been bargaining since May 12," said Hugh Bannister, DAW industrial relations director, and blamed the lack of action on an agreement for the decision by the company. "We just figured it was long enough."

The DAW letter, signed by Bannister, said, in part, "We have reached the point in negotiations where we will not modify our position any further."

The DAW proposal is the "same as Champion" International Corp.'s offer to its workers, he said.

That offer was ratified by the Lumber Production and Industrial Workers at their locals also Aug. 24.

A similar offer was also accepted earlier this month by workers of the Boise Cascade Corp.

According to the offer received by local IWA members, the offer called for pay reductions ranging from $1.25 an hour for workers receiving $13.01 an hour and more to $1.65 for employees presently working for $11.99 an hour and less. It also stipulated that wages would not be less than $9 an hour with the exception of newly hired employees, who would be paid $7 an hour for the first year after their probationary period. The workers would then receive the normal wage rate for their job assignment.

The package also reduces the number of paid holidays, annual paid vacations and the company's contributions to health benefits.

Bannister said the total wage and benefit cuts amounted to about $2.85 an hour for workers.

He also said the Champion proposal set a standard for the industry but denied it represented any type of mutual agreement reached by the management of the various companies.

"No employer is going to go and settle for less than Champion settled for," he said, "I don't know if you would call that 'pattern bargaining' or not."

After the local vote, officials were unsure as to the outcome but said those at the meeting, which attracted 76 of the local's 110 members, were frustrated over the situation.

"They're upset," commented local secretary Tim Haskins.

"It doesn't help our position at all," said Dave Brown, president of the local, when asked if the settlement by Boise Cascade and Champion International workers would weaken a possible strike at the DAW lumbermills.

One sore spot with local workers is, under the present agreement, they are being paid less, an average of $11 an hour compared to rates averaging $16 an hour at some neighboring mills, but are being asked to take the same size reductions.

"All of these people who have settled make more money than we do anyway," Haskins said.

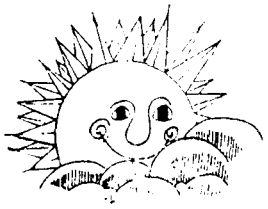
The DAW proposal was presented for a vote with no recommendation — either favorable or unfavorable — by the union, the men said.

Should a strike be called, they said the decision to return to the bargaining table would be up to DAW.

"That'd be up to the company," Haskins said. "It would be totally up to the company."

Also, the men said DAW has not proven its need for a wage reduction.

"The company is not opening their books," Brown said. "They're not showing us they need money."



WEATHER

August 19	93	44
August 20	90	44
August 21	88	56
August 22	88	54
August 23	87	54
August 24	86	46
August 25	86	48

Four truck accidents near same spot last week

by Steve Pike
News Editor

They call it the "Bobsled Run" in general and "Schober's Corner" in one particular spot.

Indeed, the profit margin for Schober's Towing and Repair of St. Regis would be a lot smaller were it not for the wrecks on Interstate 90 west of St. Regis to the Montana-Idaho border — the Bobsled Run.

It has also been said the business should save itself a trip out of St. Regis and station a wrecker at the 23.5-mile marker on the interstate — Schober's Corner.

Despite new 10-foot-wide signs warning truckers of the curves on the stretch of road where the most accidents occur, three trucks wrecked in less than a week on the road and another wrecked at the 11-mile marker on an less-infamous set of curves further west.

The net result of the week was one death, one driver charged with driving under the influence, two drivers with Basic Rule violations (driving too fast for conditions) and four badly bruised semi-tractor trailers in Schober's parking lot.

Even John Schober, owner of the towing business and resident expert on bent steel, was a little aghast at the driver charged with driving drunk, commenting that a loaded semi is like a "80-thousand-pound torpedo" and just as dangerous.

Two of the trucks were at the 23.5-mile marker, where Schober's has hauled away a total of 27 semis since the stretch of interstate opened about six years ago — the nickname is apt.

"The road isn't that bad," Schober said, blaming the wrecks on excessive speed, not bad design, as has been commonly cited as the main reason for the crashes.

Of the 27 wrecks hauled away from Schober's Corner, "all of them have been during dry, good weather," he said.

Also, wrecks in the general area increase in good weather, he said.

"They drive a little faster" when the roadways are in good condition, Schober said, and loaded semis are not prepared for the sudden change in road conditions when entering the St. Regis Canyon.

Also, the three truck drivers who wrecked in the canyon received fair warning.

"They all had to go by those signs," Schober said, referring to the new signs, which advise truckers of the severe corners and recommend 45-mile-an-hour speeds.

TIGER TRANSPORTATION, INC.
MC 140186

EUGENE TRIPP TRUCKING, INC
MC 143328

In-State WATS: 800-332-2714

Out-Of-State WATS: 800-548-8895

P.O. BOX 5328 • MISSOULA, MONTANA 59806 • (406) 728-6121

March 19, 1987

My name is Ray Kuntz and I am Sales Manager for Tiger-Tripp Transportation and Watkins and Shepard Trucking. Tiger-Tripp and Watkins & Shepard are Montana based carriers and together we had an annual payroll in 1986 of 3.2 million. Despite the fact that only about 20% of Tiger-Tripp's miles were run in the State of Montana in 1986. We employ 85% Montana based drivers.

Every year since 1981, we have received the Trail Mobile Safety Award for outstanding safety records in the State of Montana which is given by the Montana Motor Carriers Association and the American Trucking Association.

We at Tiger-Tripp and Watkins and Shepard strongly oppose any parts of Senate Bill 187 or any other bill that would legalize triple trailers in the State of Montana for the following reasons:

1. Triple trailers can only be effectively used by companies large enough to have many terminals in strategic geographical locations. Most Montana based carriers are not large enough to compete in a triple trailer market.

2. Legalizing triple trailers has the potential of reducing the number of trips coming into and going out of Montana by one third and would allow competition to drive freight rates even lower then they are now. This would place the small and medium sized Montana based carriers who cannot effectively use triple trailers in a situation where they cannot compete with prices and drive many of them out of business.

3. Triple trailers will reduce the total number of loads coming into and going out of the State of Montana, thereby reducing drivers needed, (reducing jobs, personal income tax collected and personal expenditures), reducing diesel consumption which will hurt the State in lost diesel tax revenue and will hurt the fuel distribution industry. In 1986 we paid $90,800 to the State of Montana in the form of diesel taxes. Imagine the fiscal shape the State would be in if that was reduced by one third as well as the rest of diesel tax revenue reduced by one third.

4. Based on lost revenue in the form of diesel taxes and lost jobs because of less drivers needed, we feel that this bill will have a very negative economic impact on the State of Montana.

5. We definitely feel that triple trailers are more hazardous, and will increase the number of trucking related accidents and create an increased risk to our drivers. We also feel that this will furthermore drive up insurance rates in the trucking industry.

6. Where does it end? Two years from now when competitive situations have beat rates down so companies cannot operate profitably with triple trailers, are you going to allow four trailers?

7. If this bill is passed we will pull triple trailers, not because we want to, not because we want to put our drivers in higher risk situations, but because we will be forced to remain competitive.

Sincerely,

Ray Kuntz
Sales Manager

VISITORS' REGISTER

_____ COMMITTEE

BILL NO. _____ DATE _____

SPONSOR _____

NAME (please print)	RESIDENCE	SUPPORT	OPPOSE
		X	
		X	
			*

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR WITNESS STATEMENT FORM.

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

CS-33

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