The meeting was called to order in Room 323, Legislative Building, at 1:30 p.m. on Thursday, January 25, 1979.

Senator Blakemore was in the chair.

PRESENT: Senator Richard Blakemore, Chairman
Senator Wilbur Faiss, Vice Chairman
Senator Keith Ashworth
Senator William Hernstadt
Senator Lawrence Jacobsen
Senator Clifford McCorkle
Senator Joe Neal

OTHERS PRESENT: Ed Crawford, Nevada Open Land Organized Council
Larry Ketzenberger, Las Vegas Metropolitan Police Dept.
James Miller, Carson City Sheriff's Dept.
Col. Barney Dehl, Nevada Highway Patrol
Vince Swinney, Washoe County Sheriff's Dept.
Steve Ashworth, Silver State Four Wheelers
Will Scott, Office of Traffic Safety
D. L. Lawson, Office of Traffic Safety
John Holmes, Individual
Roger Hettrick, Individual
Daryl E. Capurro, Nevada Motor Transport Assoc.
Robert F. Guinn, Individual
Cliff J. Young, U.N.R. Intern
Dee Ann Dickson, Intern
Bob Warren, Nevada Mining Association
Sam Mamet, Clark County
Alice McMorris, KOLO, Channel 8 and Radio
Ed Voegel, R-J
Gail Westrup, KLAS-TV
Sammye Ugarde, Humboldt County Commissioner
John Borda, Office of Traffic Safety
Teri Ingram, Office of Traffic Safety
Dennis O. Barry, Nevada State Highway Dept.
Joe Souza, Nevada State Highway Dept.
Bart Jacka, Department of Motor Vehicles
Lawrence A. Werner, Carson City Dept. of Public Works
Dale J. Ryan, Carson City Dept. of Public Works
Annette Mankins, High Sierra Jeepers
June E. Logan, Nye County Clerk
Rich Logan, Tonopah Elks Club

The Committee heard testimony on the following bills:

S. B. 30 PROHIBITS USE OF ELECTRONIC DEVICES TO MEASURE VEHICLE SPEED FOR CERTAIN PURPOSES.

Senator Neal spoke on S. B. 30. He distributed Exhibits A and B to the committee, "Police Radar Not Always on

Target; Drivers Should Fight Speeding Tickets" and "The Dubious Witness." He referred to the inefficiency of radar equipment; the immobility of law enforcement officers using radar equipment; and ineffective method of reducing speed in this state or even reducing the death rate. He stated that in studies that had been done in other countries there were dangers to the human body noted in the use of radar units.

Senator Hernstadt asked Senator Neal if he would entertain legislation requiring an environmental statement be obtained by any law enforcement agency wanting to use radar devices.

Senator Ashworth asked if it was suggested that the radar devices be outlawed while an environmental impact statement was being prepared.

Senator McCorkle stated that there was some question in his mind about the legitimacy of this kind of statement. He wanted to know if the statement that 30 percent of radar busts are bogus could be verified.

Senator Blakemore brought up the question of whether people with pacemakers were affected by radar devices.

Senator Neal replied that the use of the units could affect some pacemakers, but not necessarily all of them.

Senator Hernstadt referred to radar detectors and the present law possibly being discriminatory against the people that could not afford to buy these devices.

Mr. Larry Ketzenberger of the Las Vegas Metropolitan Police Department spoke in opposition to S.B. 30. He felt that radar devices are a deterrent to speeding and consequently, cut down on traffic fatalities. He also stated that radar devices were an effective tool in law enforcement.

Col. Barney Dehl, Nevada Highway Patrol, spoke in opposition to S.B. 30 also. He felt the greatest value in radar devices is the use in school zones and residential districts. He went on to say that one of the improvements in radar now allows a patrol car to monitor traffic while it is in motion leaving the operator free to look for any other type of violation. Col. Dehl spoke on the accuracy factor in radar and the new radar devices now in use are calibrated in three different ways, a tuning fork, internal calibration and constant monitoring against the speedometer, as well as visual verification of speed by the officer.

He also stated the present radar devices that are being used in this state are of no danger to either the operator or the public in any way.

Senator Ashworth stated that he felt the 55 m.p.h. speed limit is unreasonable. There was discussion on this fact.

Col. Dehl stated that since using radar the death rate had gone down as well as gasoline consumption. He felt that the radar program was a total success.

Col. Dehl and Senator Neal discussed the accuracy of radar devices and interference that could possibly be caused by other devices. They also discussed the source of money that supplied the radar devices to the Nevada Highway Patrol, the majority of which came from federal funds.

Senator Jacobsen asked Col. Dehl how many radar units there are throughout the state. Col. Dehl replied there are approximately 160 units at the present time.

Sheriff Jerry Maples of Douglas County spoke against S.B. 30 stating that he spoke for all 17 sheriffs, with the exception of Clark County whose representative was present, and they are opposed to this bill, as well as the Douglas County district attorney and Clark County district attorney. He stated that all but three counties use radar devices.

Mr. John Borda, Office of Traffic Safety, stated that in 1973 the death rate for the state was 122 fatalities in cars exceeding 55 m.p.h. In 1975, when the law came into effect, it went down to 83 with an estimation of 40 to 50 lives saved a year at lower speeds. Some discussion followed.

S. B. 47 CREATES NEW CATEGORY OF MINOR COUNTY ROADS.

Senator Norman Glaser spoke on S.B. 47 which was designed to solve the problem in the rural counties in northeastern Nevada of land administering agencies, the Forest Service and the Bureau of Land Management, who are in the process of designating large blocks of land as wilderness areas. Part of this process is the definition of a road. He was amenable to any amendments that would help this bill meet the needs of people, especially in Humboldt and Elko counties.

There was some discussion on the term "lay out" on line 14 and the difficulty of laying out some roads.

Mr. Bob Warren Nevada Mining Association, spoke in support of S.B. 47. He stated that the economy in the surrounding areas of wilderness areas could be affected due to possible air pollution of the wilderness areas or Class I air basins.

Mr. Sam Mamet of Clark County spoke requesting an amendment be written to strike out the words "lay out" and insert the word "may." If this passes in its present form there are legal liability questions that were indicated to him such as the cost of laying out new roads, surveys and maps.

Mr. Robert Guinn testified in his own behalf in support of S.B. 47. He feels the state is in a poor situation in the possibility of losing public access to much of the public lands. He stated the Bureau of Land Management and the Forest Service are arbitrarily closing off roads to various hunting, fishing and camping areas. He felt the most serious problem is where access to public lands is being cut off through private land. He went on to say that he feels that something should be done, beyond the impact of this bill, to try and continue to keep these public lands open for recreation.

Mr. John Holmes testified in his own behalf and in support of S.B. 47. He is very concerned about the definition of a road as far as the federal government is concerned. He referred to air pollution and how trees and plants in Smokey Mountains and the Blue Ridge Mountains qualify as the biggest polluters in the nitrous oxide area far exceeding automobiles. He also stated that legal liability should not be imposed on a county nor should they be penalized.

Mr. Ed Crawford, president of the Nevada Open Land Organized Council, spoke in support of S.B. 47. He was anxious to see this bill become law and become as effective as possible to stop federal encroachment of our public lands. He offered some suggestions to be considered.

Mr. Lawrence A. Werner, Director of Carson City Dept. of Public Works, spoke in support of S.B. 47 and the recommendations of Mr. Crawford and Mr. Mamet. In their particular instance they would have an administrative and fiscal problem as the bill reads at the present time.

Senator McCorkle asked if the counties could be absolved of public liability.

Senator Blakemore replied that something would be coming that may shed a great deal of light on this.

Mr. Steven Ashworth, Silver State Four Wheelers, spoke in favor of S.B. 47.

Senator Blakemore recessed hearing on S.B. 47 stating he may create a subcommittee for this bill.

There being no further business, the meeting was adjourned.

Respectfully submitted,

Jane A. King

Jane A. King, Secretary

APPROVED BY:

Richard E. Blakemore

Richard E. Blakemore, Chairman

EXHIBIT A

Sen J. NEAL

Las Vegas Sun Dec. 24, 1977 p.31

Police Radar Not Always On Target; Drivers Should Fight Speeding Tickets

By DIANE CLARK
Copley News Service

The former police officer took a radar unit out of the trunk of his car, placed it on his dash and turned it on.

The car was in a parking lot. He picked up his nearby CB radio mike and began whistling from a low to a high pitch.

Suddenly the radar speed readout for the target vehicle went from 0 to 33 to 47 to 65. Yet there were no moving cars around.

"The manufacturers try to get you to believe that radar is foolproof ... it doesn't make a mistake ... but it isn't foolproof," said Rod Dornsife.

He is an ex-San Diego, Calif., policeman whose tips on handling traffic tickets are detailed in "The Ticket Book" he recently authored.

He maintains there are many ways radar can be altered accidently — or purposely.

Dornsife recently demonstrated for me four different radar units, including those most commonly used by law enforcement officers, and the latest in handgun technology.

(Dornsife specialized in police products when he left the force to publish a national police trade magazine which he has since sold.)

Each of the radar units he used was triggered by something other than a car.

In the two cases we mentioned it was the officer's own radio and fan that triggered the radar reading. Yet, he could possibly mistake such a reading for that of a passing car. There are other things that could trigger an inaccurate reading:

- The use of a CB radio in a passing car could cause the officer's radar to register, say 71 mph, while the car is really going the legal 55 — meanwhile, the officer would have thought he'd gotten an honest reading.
- An incorrect speed could be registered for a target car that was doing 55, when a third car the officer is unaware of clicks its CB mike or perhaps warns, "Smokey's comin'."
- Moving tree limbs, swaying signs, birds, airplanes, power lines and power transformers also can play havoc with a radar reading.

Radar equipment can even read itself if the officer accidently turns the antenna toward the readout unit. Dornsife demonstrated this with an antenna that looked like a megaphone.

Just turning it 15 degrees from the window toward the caused a 15 mph reading; 25 degrees registered 33 mph and 45 degrees triggered 45 mph.

If an officer sloppily switched an antenna from sighting rear-approachig traffic to face an oncoming car he might get a reading from his own antenna that he could mistake for the car's reading.

Also, the antennas have switches that are supposed to set in either a "stationary" or a "moving" position, depending on whether the officer's car is parked or driving while monitoring traffic.

If the switch is on stationary and yet the officer's car is moving, the readout will be that of his or her own car. So, as he speeds up to overtake someone, the high speed that "locks in" the radar meter is his own — not that of the person he's flagged down.

Once again, this can simply be an honest mistake.

Dornsife emphasizes that he is not trying to accuse traffic enforcement officers of manipulating radar but rather point out the possibility of inaccuracies and the "potential" for manipulation.

Some of the most sophisticated radar unit models have a stopwatch function. When used as a stopwatch the time clocked appears in the target-car readout space and could be confused by a motorist for an mph reading instead of a "time" reading.

Dornsife, based on his research, estimates that radar readings are inaccurate about 30 percent of the time and feels that officers are not thoroughly trained in the operation of radar and thus aren't aware of its weaknesses.

He is convinced that motorists who believe they were not traveling as fast as they were "clocked" in a speeding violation should go to court and challenge the citation.

EXHIBIT A

The Dubious Witness

Maybe radar doesn't lie, but it sure misunderstands the question a lot.

• Radar tickets have always been the hardest kind to beat. Everybody—the judge, the jury, and even you, the defendant—knows that science doesn't lie. If the radar says you were speeding, you were speeding, boy. Bailiff, call the next case.

But wait a minute. How come radar critics are willing to put their right hands on the book and swear that up to 30 percent of radar busts are bogus? If that's true, then radar hardly meets the court's requirement of "proof beyond a reasonable doubt."

How can science be wrong 30 percent of the time? Well, it isn't. First, we have to separate out the deliberately falsified readings conjured up by malicious cops. Nobody knows how many of these happen every day, but the percentage of crooked policemen has to run about the same as the percentage of bad folks in the general population. Maybe a bit higher: this sort of kick-ass job just naturally tends to draw the meanies. And when one decides to get you, there's not much you can do about it.

For that reason, let's forget about dishonest cops. A far more common situation is a straight-arrow patrolman, just trying to get through the day like everybody else, who believes his scientific device when he shouldn't. This is not to say that radar lies. It doesn't. It's always measuring something. It just might not be measuring what the patrolman thinks it is.

Channel 9 News in Denver, Colorado, did a series of reports on its experimentation with a hand-held radar sold under the name of Speed Gun. A reporter sat in the front seat of a car aiming it out the windshield, just as a patrolman might to monitor an oncoming car. If he let the barrel drop much below horizontal, the speed display would produce a reading even if there was no approaching vehicle in range. The radar was picking up the defroster fan. This same situation has been reported by users of Kustom Signals' hand-held HR8.

The Denver news team also demonstrated a quick-draw approach that might be used to foil radar detectors. The reporter was again in the front seat, this time with the gun aimed down toward the floor. When he pulled it up and squeezed the trigger to lock onto a car approaching at a known speed, the radar produced a higher reading. It had picked up vibrations from the transmission tunnel.

Radar can also be influenced by electrical radiation from neon signs, two-way radios, and the like. The Denver news team was able to produce readings as high as 84 mph simply by aiming the radar out the window of a car equipped with a police radio and then keying the mike. Even low-powered CBs have been known to affect radar readings. This is really a matter of poor—you might say cheap—design. The circuitry of many radar units does not have enough filtering to control RF interference.

It's even possible that the audible whistles and squeaks that are a normal part of police radio communication could show up on radar to the disadvantage of a motorist. This is because radar responds to sound vibrations. In fact, this is the way every police radar is calibrated at the start and finish of every shift. The operator strikes a tuning fork and holds it directly in front of the antenna. If everything is right, the speed reading associated with the tuning fork's natural frequency shows up on the display. Given this sort of response, what is to stop some shrill police-radio squeak from showing up as an extralegal speed just when you happen to drive by?

Still, probably the most common source of radar error has nothing to do with these unseen and unanticipated forces. The patrolman simply nails the wrong car. Once again the law shows its ignorance of physics by specifying that the car closest to the transmitter at the time of reading is the offender, plain and simple. In many cases this is true. But not always, certainly not with enough certainty to produce proof beyond a reasonable doubt. Police radar, by the very nature of the principle upon which it operates, has no idea what it's reading. It's totally blind. It does not, as the law assumes, always pick out the front car any more than it, as some people assume, picks out the fastest car. It merely locks onto the strongest reflected signal. That could be a big car traveling behind a small car or perhaps a semi approaching from a quarter-mile or more behind both of them. Given enough time, a skilled operator will usually be able to distinguish between these vehicles by watching what happens to the readings as each vehicle passes the transmitter. If the display remains constant as the front car goes by, he can be pretty sure the radar was reading something behind. But if he locks up the reading as the leader approaches, which is the usual method, he'll never know for sure what he's got if there are other vehicles of dissimilar sizes and shapes within range. This mistake can very easily be made when bushwhacking with the KR11. The operator pushes a button, activating an automatic locking system. Then when a vehicle he intends to shoot comes within range, he releases the "hold"

Continued

button, and as soon as the device can read the speed—about two seconds, give or take a little—it will be locked in with no further verification. *Whose* speed is left to the operator's guess. And in some cases, "guess" is certainly the right term for it.

The greatest danger of radar is that the equipment's response seems so simple, when in fact it's incredibly esoteric. An example of this is a fairly commonly understood detail of speed-radar use known as *cosine error.* This error arises from the fact that radar only measures the rate at which a target approaches the transmitter. This may be true speed or it may not, depending upon the path of the target. If the target is heading on a collision course for the transmitter, the speed should be perfectly accurate. But if the path is angled with respect to the microwave beam, the radar will read a slower speed (mathematically equal to the true speed multiplied by the cosine of the angle). The bigger the angle, the slower the speed, to the point that if Smokey stands perpendicular to the road and pans his radar with passing traffic, there will be no speed reading at all, because the target does not approach or depart from the transmitter.

Usually cosine error is Smokey's problem, because it shows traffic traveling slower than true speed. But few people understand that this is not always the case. Moving radar essentially picks up two radar signals, one for the closing speed of the approaching car and one for the speed of the patrol car. It then subtracts the second from the first to obtain the actual speed of the target. But it's possible for cosine error to read the patrol car at a speed slower than it's really going. This can happen in a lot of ways; one example would be a relatively featureless road with a big truck parked off to the side. The truck would then dominate the ground-speed reflection, but because it's well off the path, the speed of the patrol car would be diminished by cosine error. Say you were going 55 and the patrol car was going 50, for a closing speed of 105 mph, but the radar read the patrol car at 40. It then nails you for 65. You'll never be able to prove you weren't going that fast.

In gathering information for this piece, I talked to the president of one radar-detector company, who recalled one of his first experiences with radar. He was shooting a hand-held gun out the back window of a Porsche 914 and discovered that nudging the gas pedal made the readings change. The radar was picking up the engine's cooling fan. Now, after several years of watching radar and the police in action, he says, "It's funny and depressing at the same time, you know: funny because now I know what they're doing and depressing because they keep doing it anyway." *P.B.*