

off-duty period to nine hours. The NPTC believes there is general and indisputable agreement that truck drivers need more opportunity for rest. The IBA supported 10 consecutive hours daily for rest.

Truckload Carriers

Schneider National recommended a 10 consecutive hour off duty period "to implement regulations that make sense for the industry, drivers, and the public."

J.B. Hunt also supported changing to 10 hours off duty instead of the current 8-hour resting period. It stated drivers would get ample opportunity for restorative sleep every day and sleep deprivation should not be an issue.

LTL Carriers

The reaction of the LTL carriers was also generally positive on the issue of off duty time. Overnite submitted a recommendation of a minimum off-duty time of 10 consecutive hours, which could be split for drivers using sleeper-berth equipment.

AAA Cooper Transportation believes the daily 10-consecutive hour period off-duty as a positive step to improve drivers' sleep possibilities.

Con-Way commented that the off-duty period should be 10 hours off duty within which to get 7 to 8 hours of sleep.

Driver Associations

The OOIDA proposed a daily off-duty period of 10 hours instead of the current eight hours. It stated: "Ten hours off duty will allow drivers more than sufficient time to get restorative sleep each day and will help drivers resist pressure from shippers, brokers, and motor carriers to drive longer hours."

Safety Advocacy Groups

PATT and NIOSH were very supportive of the proposal's 12 hours of rest.

The IIHS supported the agency's approach of taking the needed amount of daily sleep (7 hours) and the time within which such sleep can be obtained (10 hours). Together with the 60 hours in 7 days limit, the driver gets an average of 12 hours off and accumulation of fatigue would be avoided.

FMCSA Response

Each driver should have an opportunity for eight consecutive hours of uninterrupted sleep every day. The current rules require a minimum of eight consecutive hours off. Many motor carriers do not provide drivers more than the minimum 8 hours off duty,

although the present regulations certainly allow them to do so, and many drivers accept tight schedules without objection. These drivers may have to commute home, eat one or two meals, care for family members, bathe, get physical exercise, and conduct other personal activities, all within their 8-hour off-duty period.

To afford the driver an opportunity to obtain a minimum period of 7 to 8 hours to sleep, the research shows that the off-duty periods need to be increased. Nine hours off duty was originally required in 1937. For various reasons, organized labor objected to most of the original regulations, and upon further deliberation, the ICC reduced the 9-hour off-duty period to 8 hours. 6 M.C.C. 557, July 12, 1938.

The NPRM found that several studies strongly suggest the FMCSA should require an even longer consecutive off-duty period than the 9 hours the ICC required in its original 1937 HOS regulations. To provide additional off-duty periods each day for necessary personal activities and rest, docket comments and research strongly suggest the need for total off-duty periods from 10 to 16 hours. Studies in aviation (Gander, *et al.* (1991)), rail (Thomas, *et al.* (1997), Moore-Ede *et al.* (1996)), and maritime environments (U.S. Coast Guard Report No. CG-D-06-97, U.S. Coast Guard (1997) (MCS 68/INF.11)) illustrate the same point. Studies of truck drivers, including Lin *et al.* (1993) and McCartt, *et al.* (1995), point specifically to increased crash risk and recollections of increased drowsiness or sleepiness after fewer than nine hours off-duty.

Studies performed in laboratory settings, as well as studies assessing operational situations, explore the relationships between the sleep obtained and subsequent performance (Dinges, D.F. & Kribbs, N.B. (1991); Bonnet, M.H. & Arand, D.L. (1995); Belenky, G. *et al.* (1994); Dinges, D.F. *et al.* (1997); Pilcher, J.J., & Huffcutt, A.I. (1996); Belenky, G. *et al.* (1987). The results of the studies can be summarized simply: a person who is sleepy is more prone to perform poorly on tasks requiring vigilance and decisionmaking than a person who is alert.

It is virtually impossible for a driver to get an adequate amount of sleep when the driver must subtract time for commuting, meals, personal errands, and family/social life from an 8-hour off duty period, as the ICC found in 1937. Wylie *et al.* (1996), for example, showed that drivers in the study obtained nearly 2 hours less sleep per principal sleep period than their stated "ideal" (5.2 hours versus 7.2 hours). However, many

of them did not manage their off-duty time efficiently or effectively to obtain sufficient sleep. All commuting, meals, personal hygiene, social interaction within the study setting, the study protocol itself, and sleep had to fit into their off-duty periods. The U.S. and Canadian drivers participating in that study operated under schedules set up to allow driving up to the maximum time periods permitted under U.S. or Canadian regulations. The drivers returned to regular work-reporting locations at the end of a shift. The elapsed time between beginning and ending a shift included many ancillary duties and other activities in addition to driving so that time available for sleep was generally limited to 8 hours. Participants who drove a regular 10-hour daytime schedule every day spent 5.8 hours in bed and 5.4 hours asleep. Study drivers who ran a regular 13-hour schedule starting in the daytime spent 5.5 hours in bed and 5.1 hours asleep. This was about 2 hours less than the drivers would have preferred to sleep. The time-in-bed similarities between the 13-hour and 10-hour daytime drivers was likely due primarily to their proximity to the sleep center—the 13-hour drivers had to commute less than 10 minutes from their home terminal to the sleep laboratory and 10-hour drivers had to commute between 20 to 30 minutes. (All times cited are for the principal sleep periods, and do not include the naps that some drivers took during their work shifts.) Also, the drivers in both of these daytime-driving groups were able to obtain their principal sleep during optimal times of the day, starting in late evening and ending in the early morning.

Other studies have found that the amount of sleep obtained by CMV drivers is variable and often short. Arnold, P. *et al.* (1996), interviewed over 700 CMV drivers in the state of Western Australia, which has no formal HOS regulations. Of the drivers interviewed, about 5 percent reported having no sleep on one day during the prior week, 12.5 percent reported obtaining less than 4 hours of sleep one or more work days in the prior week, and about 30 percent reported obtaining less than 6 hours of sleep on at least one work day. Prior to commencing their current trips, about two-thirds of drivers had between 6 and 10 hours of sleep, but about 20 percent had less than 6 hours of sleep (pp. 27–28). VanOuwkerk, F. (1988) in a study based on interviews with 650 international European Economic Community (EEC) drivers, noted that drivers reported a median sleep time of