APPENDIX (IV) ANALYSIS OF EXEMPTIONS FOR TRUCKS OF 10,000 TO 26,000 POUNDS

The table below presents the dollar estimates of savings from the proposed rule. As the table shows, analysis of the rule, especially of the change in the log-book exemption, requires consideration of three different cases for operations under the current rule:

Case 1:driving inside the 100-mile range and choosing not to keep a log;
Case 2:driving inside the 100-mile range and choosing to keep a log; and
Case 3:driving in the 100-150 mile range, where logs now must be kept.

Safety effects of the second 16-hour day are not reported in the table or discussed further in this paper because they are expected to be very slight. On the basis of our analysis in the 2003 RIA, we estimate the increase in benefits caused by these safety effects to be well below $10 million per year.

Summary Table
(Annual Savings in millions, rounded to the nearest $10 million)

	Case 1	**Case 2**	**Case 3**	**Total Annual Savings (millions)**
Description	Now operating within 100-mile range and not keeping logs. Duty tours ≤ 12 hours.	Now operating within 100-mile range and keeping logs. Duty tours up to 14 hours.	Now operating in 100-150 mile range. Must keep logs and observe 14-hour limit.	
Log-book effects	No effect: Already exempt from log requirement. Case-1 benefit: $0	Relieved from log requirement. Case-2 benefit: $100.	Relieved from log requirement. Case-3 benefit: $40	$140
14-hour tour with log-book exemption	May use 14-hour tour now, if they keep log. Log cost is $2.00/day. Tour>12 hours of little value to this group. Benefit: minimal	Already choosing log-book and 14-hour tour. Benefit: zero	Already have 14-hour tour.	$ 0

	Case 1	Case 2	Case 3	Total Annual Savings (millions)
Second 16-hour day	Case-1 trucks would not use the 16-hour day because they already choose not to use the 14-hour tour. Savings: $0	Analysis is an extension of analysis of second 16-hour day that was done for the 2003 RIA. This approach did not distinguish between Cases 2 and 3. Productivity Benefit: $140		$140
Total				$280

Overview of analysis

In the 2003 RIA, ICF estimated the savings from a second 16-hour day. We have used that figure as the basis for our current estimate, adjusting for inflation and number of affected drivers. Both for the second 16-hour day and the log-book exemption, we had to estimate the number of truck-days that would be affected.

A truck-day is the relevant unit, because the magnitude of effects of both the log-book exemption and the 16-hour day depends on the number of days on which they are used. In effect, a truck-day is the same thing as a driver-day. This is based on the premise that, on any given day, each truck in use has one driver. This is virtually always the case in over-the-road trucking (except for teams); it is also the case for short-haul operations. One could imagine cases in which two different construction workers drive the same truck on the same day or one worker uses two different trucks, but we expect such cases to be rare and likely to cancel each other out.

Details of analysis

VIUS data:

For estimating truck-days, the starting point is the Vehicle Inventory and Use Survey (VIUS) from the 2002 Economic Census. Table 4 from the 2002 VIUS is the basis for the table in the upper left of the spreadsheet. The column headed “Trucks” gives number of 10,000 to 26,000-pound trucks (10-26 trucks) in each of the reported operating ranges. (The two columns to the left are for, respectively, medium and light-heavy trucks, the two VIUS classes that comprise 10-26 trucks.) Each truck in the survey is assigned to an operating range on the basis of respondents’ statements about the range in which the truck runs the most miles. The table shows that 2,238,000 million 10-26 trucks are assigned to all operating ranges. This number is converted to truck-days for our purpose in a series of steps below the heading, “Log-book Savings.” (The VIUS data may underestimate to some degree the trucks in the 101-200 range. See note at end of this paper.)

Trucks in 101-150 mile range:

We have to estimate the percentage of trucks in the 101-200 range that operate inside 150 miles. We see from the VIUS-based table that number of trucks in each range falls rapidly with each successive increment in operating range. This is clear if we consider trucks inside 100 miles and then trucks in the 101-200 range. In the first group are almost 2,000,000 trucks; in the second, 98,000. It would be unreasonable to assume that half of those 98,000 trucks are inside 150 miles and half outside, given the strong tendency towards smaller numbers at greater distances. As the spreadsheet shows, we assume that 75.0 percent of the trucks in the 101-200 range are in the 101-150 range. This leads to an estimate of 2,036,000 trucks in the 0-150 range.

Remaining steps:

Next, this number is adjusted for non-reported trucks. These are trucks included in the survey for which operating ranges were not reported. Since we need to estimate the total number of trucks in the 0-150 range, we have to add a number for non-reported trucks. We assume that non-reported trucks have the same distribution over the operating ranges as reported trucks. Therefore, we increase the 0-150 estimate by the ratio of non-reported trucks to reported trucks (373/2,238). This gives us an adjusted total of 2,375,000 trucks.

This figure must be further adjusted by subtracting trucks engaged in agriculture. For all practical purposes, these trucks can be regarded as exempt from HOS rules. VIUS reports 404,000 10-26 trucks in agricultural use. As shown, subtracting these leads to 1,971,000 trucks operating inside the 150-mile range.

One further step—adjustment for extent of use in a year—is required. Not all the trucks in VIUS are used for 12 months in a year. On the right side of the spreadsheet is a table which gives the basis for calculating truck-years according to months used. The column headed “Trucks” is for all 10-26 trucks reported in VIUS except for those with one month of use or reported as not used at all. (This column is the sum of the two columns to the left which reflect medium and light-heavy trucks, respectively.) For trucks used 7 to 11 months, we assume the average is in the middle of the range—9 months, or 75 percent of a year. This number is, thus, adjusted down by multiplying by 0.75. We do the same for 2 to 6 months of use; we assume an average of 4 months’ use and multiply by one-third. This leads to an adjusted total of 2,165,000 truck-years. We use the ratio of this number to total trucks in this table (2,165/2,534) to convert our estimate of trucks on the left side of the spreadsheet to truck-years on the basis of use. The result is 1,684,000 truck-years on the basis of actual use. This figure is the basis of our benefit estimates for both the log-book exemption and the second 16-hour day.

For the log-book savings, truck-years are converted to truck-days (driver-days) with two factors. We assume the average driver works 48 weeks a year, allowing for vacations, holidays, and sick days. On the basis of an analysis of survey data on daily and weekly hours of work for a sample of short-haul drivers, we use 5.5 days worked per week for the average short-haul driver. The next steps in the benefit calculation for the log-book exemption are in the two columns headed “Case 2” and “Case 3.” Under Case 2, the first number is 1,962,000 trucks, all the trucks in the 0-100 range from the VIUS table. This number is adjusted for non-reported trucks by the same method used for all 0-150 trucks in the column to the left—by the ratio of all non-reported trucks to the total in the VIUS table. The next step is subtraction of the agricultural trucks. We assume that all agricultural trucks are used within the 100-mile range; it would not be often that a farm truck would go 100 miles from home. This brings us to 1,885,000 trucks. This is adjusted for actual use with the factor calculated before, and we have 1,610,000 truck-years inside 100 miles.

For Case 1 drivers, who currently do not keep logs and stay within the 12-hour limit, there is a chance that some would choose to keep logs in order to be able to extend their tours beyond 12 hours. We have found, however, that any driver with a need to extend a tour even a fraction of an hour beyond the 12-hour limit would find it worthwhile to keep a log to secure that increase in productivity. We based this conclusion on the fact that keeping a log for a day imposes a cost of only about $2, whereas the increased productivity of a driver able to work another 15 minutes has a value of that same small magnitude. Cases in which drivers would choose to extend their tours of duty once the rules eliminate the log book requirement, then, would be limited to those few cases in which very short extensions were desired. Furthermore, the added savings from these cases can be shown to be quite small. Thus, we concluded that the savings from drivers in Case 1 would be minimal, and have left these savings out of the analysis.

For Case 2, we have to estimate the number of trucks operating inside 100 miles and choosing to keep logs. For this purpose, we rely on the FMCSA field survey. In the survey, 10.7 percent of short-haul trucks reported tours of duty longer than 12 hours. We assume these trucks were keeping logs; thus, we estimate that 10.7 percent of 0-100-mile trucks are using log books. With this factor, and our assumptions of 48 weeks per year and 5.5 days per week, we arrive at 44,215,000 truck-days for which a log-book would not have to be filled out under the proposed rule. We convert this to dollars with estimates from the 2003 RIA (9.5 minutes to do the log and $12.62/hour for the driver's wage) and an inflation adjustment. The result is a stream of annual savings of $95,593,000, which we have rounded to $100 million.

For Case 3, the same procedure is followed with two exceptions. First, agricultural trucks are not subtracted since they were all assigned to Case 2. Second, all Case-3 trucks are now keeping logs, so there is no need to adjust for non-log-keepers. The result is an annual stream of savings of $41,935,000, or about $40 million. The Case-2 and Case-3 benefits are summed in the column to the right for a total of about $140 million.

Benefits from the first 16-hour day were estimated in the 2003 RIA, and found to equal approximately $470 million annually. A calculation using the same methodology showed that the savings from a second 16-hour day in each week would be about ¼ as great. Thus, for 1.5 million short-haul drivers, annual savings are estimated at $118 million. This number was adjusted upwards on the basis of our truck-year estimate (1,684/1,500) and for inflation. The result is an annual savings stream of $143,307,000, which we have rounded to $140 million.

Total annual savings, including both the log book and second 16-hour days, is estimated to be about $280 million.

Note on VIUS data on trucks in 101-200 range

Census assigns trucks in VIUS to "primary" operating ranges according to the range in which a truck runs for most of its miles. If, for example, a respondent reports 55.0 percent of a truck's miles in the 101-200 range, that is the truck's primary operating range, and that is where the truck appears in VIUS Table 4. Obviously, that truck operates in other ranges as well. But the same would be true for a truck assigned to the 51-100 range on the basis of 50 percent of its miles. So, we would expect errors from this source to be largely self-canceling, but we cannot be sure that this is entirely so.

Some idea of the possibility for error may be found in VIUS Table 8. In this table are data on truck-miles by operating range according to what respondents actually answered. But these data are reported only for all trucks and for all except light trucks. We can, however, compare the actual reported distribution of mileage across operating ranges for this latter group to the same distribution of mileage according to primary operating range in Table 6 of VIUS. To the extent that the mileage distribution as reported comports with mileage distributed according to primary range, we can have some confidence that the distribution from Table 4 accurately represents the distribution of truck-days over the operating ranges of interest to us.

Mileage percentages for all except light trucks

	Primary	Actual
0-100	51.5	51.6
101-200	10.3	12.2

This suggests that our estimates based on distribution by primary range could slightly underestimate the number of truck days in the 101-150 range. On the other hand, our estimate of truck-days could be high because we have made no allowance for truck operations that may be exempted from HOS rules by State laws. Accordingly, we believe our estimate is sufficiently reliable.