The Original ISS

Since the original ISS was introduced in 1995, a modified and enhanced version of ISS, termed ISS-2, has been developed. It is expected that the ISS-2 will completely replace the original ISS by the end of calendar year 2000. For more information regarding the ISS-2, see:

> ISS-2: The Integration of the Motor Carrier Safety Status measurement System (SafeStat) into the Roadside Inspection Selection System, January 2000, Upper Great Plains Transportation Institute, North Dakota State University.
> (http://www.ugpti.org/research/carrier/projects/mcp005.php)

The Inspection Selection System (ISS) is a decision-aid for commercial vehicle roadside driver/vehicle safety inspections which guides safety inspectors in selecting vehicles for inspection. The original ISS provides a three tiered recommendation as follows:

Recommendation	Original ISS Inspection Value
Inspect (inspection warranted)	90-100
Optional (may be worth a look)	80-89
Pass (no inspection required)	50-79

The underlying inspection value is based on data analysis of the motor carrier's safety performance record using the myriad of information in the National Motor Carrier Management Information System (MCMIS). This algorithm is explained in detail in the following pages. For a more detailed description and analysis of the original ISS, see:

> The Roadside Inspection Selection System for Commercial Vehicles, March 1997, Upper Great Plains Transportation Institute, North Dakota State University.
> (http://www.ugpti.org/research/carrier/projects/mcp013.php)

The Original ISS Algorithm

The term *percentile* is used in the following discussion. To explain this term by using an example: if a carrier has a vehicle out-of-service (OOS) rate of, say, 50 percent, this places them in the "80th percentile" for all carriers nationwide. This simply means that 80 percent of all carriers nationwide have a vehicle OOS rate lower than this amount (and, consequently, 20 percent of all carriers have a vehicle OOS rate higher than this amount).

Steps to Determine the Original ISS Inspection Value:

(1)   After the DOT/ICC number is entered, if a carrier match is found, the ISS checks if the carrier is currently in the PRISM[1] monitoring process, and if the carrier has a safety compliance fitness rating assigned within the past five years. If they are not in the PRISM monitoring process and do not have a rating or this rating is satisfactory, nothing is calculated here and the system moves to the next step.

If they are in the PRISM monitoring process or have an unsatisfactory rating, they are assigned an inspection value of 100 and strongly recommended for inspection. If they have a conditional rating, they are assigned a CR-value of 90 and the system continues to the next step.

(2)   The ISS then determines Vehicle and Driver OOS-values for the carrier. These are only calculated if the carrier has had at least three driver and/or vehicle inspections in the last two years. Carriers are assigned a Vehicle OOS-value of 100 if they have a 100% vehicle out-of-service rate (i.e., every vehicle inspection they've had in the last two years has resulted in a vehicle being placed OOS). Then, based on the nationwide distribution of vehicle out-of-service rates, carriers with vehicle OOS rates lower than 100% receive lower Vehicle OOS-values. Specifically, they receive two points subtracted from 100 for each five percentile points below 100% they fall. The Driver OOS-value is determined in a similar manner, and then these two values are averaged to arrive at an OOS Average-value.

(3)   The Safety Fitness Average-value is then calculated as the higher of the OOS Average-value from above or the CR-value from the first step (if applicable).

(4)   The ISS then determines an Inspection per Power Unit and per Driver-value. Basically, carriers receive higher values here the lower their inspection rates are. The value starts at zero when the carrier is at or above the 50th percentile (median) for their size group, and then two points are added to this value for each five percentile points below the median they fall. The Inspection per Power Unit and per Driver-values are then averaged to arrive at the Inspection Average-value.

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[1]The Performance and Registration Information Systems Management program. See www.fmcsa.dot.gov/factsfigs/Prism.htm for a description.

(5)   The final ISS Inspection-value which is displayed is calculated by adding the Inspection Average-value above and the Safety Fitness Average-value from the third step (with a maximum value of 100).

(6)   If the carrier has not had at least three roadside inspections in the last two years (and no compliance review), they are assigned ISS inspection values based only on their size. The largest carriers are assigned values of 100, then two points are subtracted for each of the six smaller size groups a carrier may fall into. This number is displayed with an explanation that there is insufficient data available about this carrier.

This is how the original ISS works. Every carrier in the MCMIS database is assigned a value; and it was designed to meet its two main goals: to target carriers for roadside inspection with (1) the worst past safety performance, and (2) those for which there is little or no information available. This means more efficient use of scarce resources by focusing on less safe vehicles and drivers.