

**SWISS HEAVY GOODS VEHICLE CONTROL SITES  
PEER EXCHANGE MEETING  
Final Report**

**BACKGROUND**

On February 19, 2008, a peer exchange meeting was held in Glendale, Arizona with the intent of exchanging information on technology-based approaches supporting commercial motor vehicle enforcement. Meeting attendees included transportation and law enforcement officials from Switzerland and U.S. counterparts in the states of Arizona and Washington and at the federal level. A full list of meeting attendees is provided in Table 1.

The meeting was sponsored by the Arizona Department of Transportation and the Federal Highway Administration's (FHWA) Offices of International Programs and Freight Management and Operations. The Office of Freight Management and Operations accommodated meeting attendance for the Washington State representatives via the Peer to Peer Exchange Program.

During the meeting, U.S. representatives described vehicle size and weight management procedures and practices at the federal and state levels. Similarly, Swiss representatives provided an overview of vehicle size and weight management policies and procedures in Switzerland, concluding with a description of their Heavy Goods Vehicle (HGV) Control Sites. Dr. Jodi Carson, Texas Transportation Institute, presented the results of the 2006 European Commercial Motor Vehicle Size and Weight Enforcement Scan Tour, providing a comparative perspective between U.S. and Swiss (and broader European) vehicle size and weight management policies and procedures. More specifically, the meeting agenda (provided in Appendix A) included the following:

- welcome and introductions;
- an overview of FHWA's Truck Size and Weight Program;
- results from the 2006 European Commercial Motor Vehicle Size and Weight Enforcement Scan Tour;
- an overview of freight management policies in Switzerland;
- an overview of commercial motor vehicle size and weight enforcement policies and practices in Switzerland;
- an overview of Arizona's commercial vehicle enforcement program;
- an overview of Washington state freight management issues;
- presentation of the Heavy Goods Vehicle (HGV) Control Sites in Switzerland;
- open discussion; and
- closing remarks.

This document summarizes the information that was presented and exchanged among meeting attendees.

**Table 1. Swiss Heavy Goods Vehicle Control Sites Peer Exchange Meeting Attendees**

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## **WELCOME AND INTRODUCTIONS**

Mr. Ric Athey, Arizona Department of Transportation, and Mr. Tom Kearney, Federal Highway Administration (FHWA), welcomed the meeting attendees. Mr. Kearney also provided a brief overview of the meeting purpose, emphasizing the importance for the U.S. - based on significant forthcoming development projects in Arizona, Mexico, Kansas, etc. – to make intelligent decisions for vehicle size and weight management.

## **OVERVIEW OF FHWA TRUCK SIZE AND WEIGHT PROGRAM**

Mr. Tom Kearney, FHWA, provided an overview of the federal size and weight program, including a historical timeline for regulation development and a description of current and emerging enforcement activities, with a focus on automated approaches.

### ***Historical Timeline***

Notable developments in U.S. vehicle size and weight regulation include:

- 1880s U.S. government began to get involved in railway system right-of-way acquisition.
- 1913 Maine was the first state to impose a state-level weight limit for roadways; no federal limits were yet defined.
- 1941 The Interstate Commerce Commission noted a national compelling interest to establish federal controls of size and weight.
- 1956 The first federal size and weight limits were passed.
- 1974 The Bridge Formula was enacted; federal axle and gross vehicle limits increased.
- 1982 The National Truck Network was established and the Surface Transportation Assistance Act (STAA) vehicle defined; federal size limits enacted.
- 1991 Congress “froze” the weight and the eligible roadways for operation of longer combination vehicles (LCVs) with safety as priority. The freeze resulted in a disconnected network of roadways eligible for use by LCVs.

### ***Enforcement Procedures and Technologies***

State and federal size and weight regulation enforcement is the responsibility of state police or public safety agencies; FHWA does not directly conduct enforcement. Technologies used to support state-level enforcement include: (1) fixed static scales typically permanently installed at stationary weigh stations, (2) semi-portable static scales requiring two to four people to operate, (3) portable static scales requiring two people to operate, and (4) high speed WIM systems currently used for pre-screening suspected non-compliant vehicles upstream of weigh stations.

Technologies and subsequent enforcement actions are typically located in response to: (1) a need to control state points of entry, (2) enforcement personnel operational knowledge of problematic routes and corridors, and (3) traffic monitoring and freight demand estimation needs along corridors of interest. The number of personnel assigned to vehicle size and weight enforcement activities varies depending on the amount of commercial motor vehicles traffic through the state and the state’s ability to fund an adequate enforcement program.

In 2006, over 225 million trucks were weighed but just over 1% (close to 2.5 million) received citations. This does not compare well to the approximate 80% citation efficiency standards reported in The Netherlands.

The issuance of permits is also a state-level function. States have the authority to issue non-divisible and divisible load permits (i.e., a load in excess of the 80,000 pound federal limit enacted in 1956) but are not authorized to issue permits for LCVs. In 2006, approximately 4 million non-divisible load permits and almost 1 million divisible load permits were issued.

In the U.S., commodity tonnage is forecasted to increase 92% by 2035. Commodity tonnage moved by truck is forecasted to almost double by 2035. The demand for higher value, lighter weight goods will result in an increased volume of trucks to move a given tonnage. Limited U.S. enforcement resources cannot keep pace with the projected increases in truck volumes.

The Federal Motor Carrier Safety Administration (FMCSA) and FHWA have undertaken recent initiatives to better ready U.S. enforcement officials for future truck demands. FMCSA has promoted development of the Commercial Vehicle Information Systems and Networks (CVISN) focused on automating safety inspection data, automating driver credentialing systems, and conducting aspects of truck inspections at highway speeds. FHWA is promoting development of virtual weigh stations (VWSs) and e-permitting systems. VWSs have the capability to perform a full menu of vehicle and driver inspection activities presently conducted at traditional weigh station but at highway speeds using advanced roadside automation tools. Automated citation issuance is an ultimate feature of VWSs; interim implementation requires interface with downstream law enforcement personnel. E-permitting encourages web-based application processes and improved monitoring to ensure that the load being transported matches the permit request. These efforts are being integrated under the Smart Roadside Initiative, with a Smart Roadside Workshop planned for April 2008 in Florida.

Several states have undertaken advanced technology initiatives designed to enhance vehicle size and weight management:

- Washington State has included high-speed WIM capabilities at each CVISN site;
- California has included high-speed WIM capabilities and is investigating vehicle dimension scanning;
- Florida, to enhance port operations in Jacksonville, undertook development of the JaxPort Advanced Technology Site that enables the weighing of a container, the dispatch of the truck, RFID communications to port to indicate the load in motion, and the comparison of downstream WIM data on the highway with the WIM data at the port to prevent load tampering. This data is provided to Florida DOT to support freight planning, bridge design, and enforcement.
- New York integrated CVISN, size and weight enforcement, and state issued permit compliance as elements in a Commercial Vehicle Information Infrastructure (CVII) project. Operational sites may be demonstrated during the 2008 ITS World Congress in New York.

Challenging the more widespread implementation of advanced technology initiatives such as CVISN, VWSs, e-permitting systems, and others is the lack of dedicated funding to support implementation. Access to Federal-aid funds to support such efforts can be highly competitive.

## **2006 EUROPEAN COMMERCIAL MOTOR VEHICLE SIZE AND WEIGHT ENFORCEMENT SCAN TOUR**

Dr. Jodi Carson, Texas Transportation Institute, provided general observations from the 2006 European Commercial Motor Vehicle Size and Weight Enforcement Scan Tour related to enforcement technologies, enforcement procedures, unique data applications, public-private funding, and harmonization approaches in Europe. More detailed information is presented in the *Commercial Motor Vehicle Size and Weight Enforcement in Europe* report, available through the FHWA Office of International Programs website, <http://international.fhwa.dot.gov/pubs/pl07002/index.cfm>.

### ***Enforcement Technologies***

Unique European enforcement technologies included: (1) Heavy Goods Vehicle (HGV) Control Sites (observed in Switzerland and the focus of this meeting) and (2) Bridge Weigh-in-motion (BWIM) Systems observed in Slovenia and France. HGV Control Sites - comprising a three-dimensional vehicle profile scanner, a full GVW static scale system, an automated citation issuance system, and, at some sites, full safety inspection facilities – are discussed in more detail later in this document. BWIM Systems support a broad range of vehicle size and weight management activities, provide a unique potential for bridge structure and health analysis, and represent a low cost, feasible option for monitoring less-traveled bypass routes. In the U.S. a single test site is currently under development in Alabama, with a forthcoming BWIM focused symposium and the longer-term intent of deploying and evaluating BWIM systems in additional states through a pooled-fund effort or other mechanism.

Use of piezo quartz/ceramic WIM systems is more prevalent in Europe; more widespread implementation of the lower cost WIM systems is believed to offset any observed loss in accuracy. In addition, Europeans were observed to be more willing to deploy “imperfect” technology if incremental benefits over existing procedures can be gained. To maximize technology performance, Europeans have developed efficient and cost-effective ways of maintaining WIM system calibration using static measurements resulting from downstream mobile enforcement efforts. These techniques contrast with U.S. procedures which are generally defined by ASTM International and the Long-term Pavement Performance (LTPP) Monitoring Program but are infrequently conducted because of cost.

Emerging technologies in Europe are ultimately focused on achieving direct enforcement; initial efforts will establish metrological and statutory authority at low-speed operations and subsequent efforts will obtain authority at high-speed operations using multiple sensor WIM systems. Both The Netherlands and France estimate that the attainment of direct enforcement capabilities from automated systems is 5 to 20 years in the future.

### ***Enforcement Procedures***

Europeans were observed to use technology to support a much broader set of procedures than currently in the U.S. including: (1) real-time pre-selection of potentially non-compliant carriers using a high speed WIM system, video/photograph capture, handheld/portable equipment to receive data, and enforcement personnel to escort suspected non-compliant vehicles for static weighing; (2) mobile patrol scheduling and dispatch (i.e., location, day of week, time of day) using historic and continuous WIM data; (3) carrier advisory notices and/or preventative visits for habitually non-compliant carriers identified through historic and continuous WIM and video data (similar to the U.S. process for conducting safety-related educational contacts and safety audits); (4) real-time special transport monitoring, and more.

In addition, the effectiveness and efficiency of European vehicle size and weight enforcement procedures was observed to be much higher than observed in the U.S. (i.e., the number of citations issued per vehicle stopped was estimated to be 80% in The Netherlands compared to ~1% in the U.S.). A higher reliance on mobile rather than fixed enforcement operations and the use of real-time and historic WIM data to focus enforcement efforts allows European enforcement officials to better respond to the dynamic nature of the trucking industry.

### ***Unique Data Applications***

Europeans were observed to make more extensive use of available data through vehicle size and weight technologies, despite limited deployment (i.e., geographic coverage). The Netherlands' broad and novel use of WIM data to support vehicle size and weight management – including the issuance of weekly data quality reports to enhance data confidence and the integration into long-term and aggressive planning goals related to overweight vehicle reduction - was documented in a six-page brochure available electronically through the FHWA Office of International Programs website, [http://international.fhwa.dot.gov/links/pub\\_details.cfm?id=556](http://international.fhwa.dot.gov/links/pub_details.cfm?id=556), and in hard copy format through Mr. Tom Kearney, FHWA.

Recent developments reported by Mr. Willy Burgunder, Swiss Federal Roads Administration, will improve the level of data sharing between European countries and allow for better monitoring and enforcement of foreign carriers within each country. Under a new ETC system, every European country is required to provide data from police controls to Brussels.

### ***Public/Private Funding***

To encourage investment in vehicle size and weight enforcement, both Europe and the U.S. promote benefits for infrastructure preservation. Europeans however, also promote vehicle size and weight enforcement benefits related to the environment and safety resulting in a stronger tri-part argument for investment. In the U.S., the relationship between vehicle size and weight enforcement and safety has not been directly quantified. A synthesis study is currently underway by researchers at the University of Alabama to investigate existing evidence that links compromised levels of safety with illegal or legal oversize/overweight movements with the intent of strengthening the safety basis for increased investment in vehicle size and weight enforcement efforts.

Private sector involvement in vehicle size and weight enforcement was also observed to be broader in Europe than the U.S. In the U.S., private sector involvement typically includes vendors and is limited to the supply of equipment. In Europe, private industry also has a role in equipment installations, data collection, and data analysis. Statutory differences regarding public sector involvement support a more efficient process in Europe for moving products to market (regulations in the U.S. prohibit preferential treatment to a private entity).

Tolling is widely used in Europe but was not observed to be integrated with WIM systems to support a weight-based fee structure. Instead, tolling charges are based on fixed, registered weight capacity, with no distinction for fully loaded or empty trucks.

### ***Harmonization Approaches***

The relationship between European countries and the European Union (EU) was observed to be similar to the U.S. states' relationship with the Federal government. Each country visited expressed concern over protecting their own interest, along with a motivation to be consistent with EU's policies. With respect to regulation, country imposed vehicle size and weight limits cannot be lower than the EU's unless in an infrastructure constraint exists.

## OVERVIEW OF FREIGHT MANAGEMENT POLICIES IN SWITZERLAND

Turning attention to vehicle size and weight management policies and procedures in Switzerland, Mr. Willie Burgunder, Deputy Director, Swiss Federal Roads Agency and Mr. Reto Habermacher, Police Commander in the Canton of Uri, provided an overview of their unique approach to vehicle size and weight management.

According to Switzerland's recent transport philosophy, goods to be transported long distances should be transported by rail, not truck. Successful implementation of this philosophy requires: (1) intermodal transportation facilities and systems that encourage transfer of goods between truck and rail, (2) adequate regulation and enforcement (including dedicated funding for enforcement) to ensure a competitive marketplace for each mode, and (3) local cooperation to affect enforcement actions. Competitive usage of each mode cannot be achieved if truck transport firms break traffic rules, overload trucks, do not observe hours of service requirements, etc. In 1999, the Minister of Transport charged the Federal Roads Agency with helping to ensure this competitive marketplace. Mr. Burgunder was charged with leading this effort.

The government of Switzerland comprises a team of 7 Federal Counsels led by a one-year term Federation President. Switzerland is a member of the United Nations but not the EU (a contractual agreement exists between Switzerland and the EU but the Swiss are under no legal authority from EU). The country is geographically segregated into 26 relatively independent counties or Cantons. Switzerland's economy is reliant on factories and production, with limited availability of natural resources. Populations and development are concentrated in the low lying regions of the country, with the Alps proving a significant accessibility challenge on the north.

Roadways through the Alps are very narrow but must support a high volume of traffic during the summer months and significant commercial traffic. In 2006, there were 30.1 million metric tons of goods transported through Swiss Alps; 66% moved by rail and 34% moved on the roads. In an effort to limit the amount of heavy truck traffic through the Alps and encourage increased rail transport, the Swiss are constructing two new 30-mile Alpine tunnels for trains that would facilitate intermodal transport.

One particular route, Highway A-2, is the most important route supporting travel between Germany and Italy. When the highway was constructed in the 1970s, designers did not intend to develop a national goods corridor. Today, about 900,000 trucks (up from 200,000 trucks in 1982) utilize this route, representing the easiest passageway. The highway, with only two lanes of bi-directional traffic and no emergency lanes, experiences problems with road safety and security.

Along this route, the St. Gotthard Tunnel represents the second longest tunnel in Europe at 10.35 miles in length (the longest is in Norway at 12.5 miles in length but this route carries significantly less traffic). In addition to the travel lanes, the tunnel provides for a narrow parallel security corridor with access points every 200 meters to provide a refuge in case of a tunnel accident.

In October 2001, a major accident involving a fire in the Gotthard tunnel killed 11 people. Despite the design feature, people did not access the security corridor as intended. Following this tragic incident, tunnel operation focus shifted from maximizing vehicle throughput to maximizing safety through the tunnel.

In December 2001, the Federal Council decided to reopen the tunnel; first to private motorized transport and then to heavy good vehicles. Initially, with the increased focus on safety, platoons of heavy goods vehicles were allowed through the tunnel as one-way traffic and maintaining a spacing of 150 meters between vehicles. This initial approach resulted in lengthy delays, queues up to 20 miles in length, and increased harmful emissions on both sides of the tunnel.

In September 2002, the Swiss initiated an interval feed system that provided for two-way heavy goods vehicle traffic in addition to other traffic types. Tunnel capacity was limited to 1000 “units” per hour through tunnel with . one car = 1 unit, one commercial vehicle = 1.5 units and one heavy goods vehicle/coach = 3 units. Although tunnel access priority was given to private vehicles, a range of acceptable tunnel access capacities was defined for trucks to prevent undue delay. A minimum of 60 and a maximum of 160 trucks per hour (approximately 1 to three trucks per minute) still provide sufficient distance between vehicles to ensure safety.

Limitations on the number of trucks provided access to the tunnel required concurrent development of staging or waiting areas. At the entrance of the tunnel, sufficient physical space exists to store 30 trucks. Once this capacity is consumed, trucks are directed to alternative waiting areas depending on their originating route. Trucks approaching the tunnel from Highway A-4 are directed to a waiting area in Axen. Trucks approaching the tunnel from Highway A-2 are directed to an alternate waiting area along the highway that accommodates up to 80 trucks. Some trucks are directed to the Erstfeld waiting area, where they may also undergo heavy goods vehicle controls. During winter operations, truck waiting areas are moved to lower elevations, and highways are patrolled to detect icy conditions. If a truck should crash as a result of icy road conditions, a minimum of three hours is required to reopen the road.

Priority private traffic can typically access the tunnel directly without any delay. In addition, commercial vehicles transporting time-sensitive commodities, designated by an “S” mounted on the vehicle, are allowed to bypass the waiting areas and enter the tunnel directly. The penalty for inappropriately displaying an “S” to avoid transport delays is a \$500 fine.

Dangerous goods are prohibited through Gotthard tunnel. Instead, dangerous goods are transported by rail.

A multi-stage control system is in place for heavy goods vehicles approaching the tunnel. Vehicle height sensors are installed prior to the first and second waiting areas and at the tunnel entrance to detect vehicles potentially bypassing the upstream waiting areas. Dynamic message and static signs are used to relay compliance information. If a vehicle is determined to be over-height, the driver incurs a fine and must reconfigure the load to meet height limitations or must dispatch a second vehicle to assume a portion of the load.

At Erstfeld, height sensors are supplemented with a dynamic weigh station and the capabilities to perform full controls (i.e., size, weight, credentials, transport of dangerous goods, etc.). If a vehicle is assumed to be compliant, based on height and weight sensor measurements, the driver loses almost no time. If a problem is detected, additional controls will performed by limited capacity officers. Fully trained officers will be called to the site, as necessary. If a driver has driven in excess of the allowed in-service duration, the driver is fined and prevented from proceeding. Specially trained technicians are used to perform detailed vehicle inspections. If a mechanical or safety problems is detected, the driver is fined and the vehicle is taken out-of-service until the problem is remedied. No dedicated roadside facilities are provided for performing brake repairs, adjustments, etc.; drivers are directed to nearby services in the Canton.



Approximately 19,000 person-hours are expended annually to control trucks at the Erstfeld site. Heavy goods vehicles are not permitted to travel between 10:00 pm and 5:00 AM, on Sundays, and on public holidays; the Erstfeld control facility maintains similar hours of operation.

The number of accidents in the Gotthard Tunnel has decreased 80% since the implementation of the interval feed system.

## **ARIZONA COMMERCIAL VEHICLE ENFORCEMENT PROGRAM OVERVIEW**

Mr. Steven Abney, Arizona Department of Transportation (ADOT) provided an overview of Arizona's vehicle size and weight enforcement procedures and technologies.

ADOT's enforcement facilities include 22 fixed ports of entry (POE):

- Six existing international POEs and a new port under construction along the Mexican border
  - The existing San Luis POE, which currently accommodates pedestrian, private vehicle and commercial vehicle traffic is being redesigned to improve safety. Commercial vehicle traffic will be rerouted to a San Luis 2 site further east of the San Luis POE.
  - Nogales is one of the largest international border crossings in the U.S., servicing billions of dollars of produce and other commodities each year.
- Six interstate POEs
- Nine secondary POEs

The POEs are staffed by ADOT-certified police officers. Size and weight enforcement is the primary purpose but safety inspections are also performed. Safety inspections are a time consuming and detailed process; selection of vehicles most in need of inspections can improve efficiency. Significant development (i.e., banks, restaurants) has occurred around the fixed POEs.

Increasing truck traffic challenges the efficient operations of POEs. Truck traffic in Arizona is projected to increase by 70% by 2020, supporting both east-west travel corridors from California to the east coast and north-south travel corridors from Mexico to Canada (CANAMEX). Understaffing and outdated facilities further challenge POE operations.

Two mobile operations, in Phoenix and Douglas, complement the POEs by discouraging circumnavigation of fixed facilities by drivers but are challenged by inefficient capture and physical space constraints for inspection. The mobile operations units have partnered with tax evasion personnel and local law enforcement to perform multi-agency details. Mobile operations also suffer shortcomings related to traffic queues, vehicle delays, etc.

ADOT's size and weight enforcement personnel also work in concert with engineering personnel to issue oversize/overweight permits and ensure special escorts or law enforcement involvement as required.

ADOT's operating budget is financed through Motor Vehicle Division collections. Direct collections from POE operations approximate \$18 million per year but these funds are deposited in the Highway User Revenue Fund (HURF) for broader distribution. The ability to secure

funding to support enhanced vehicle size and weight enforcement activities has been an ongoing challenge.

To balance uncertainty in funding and to respond to ever increasing truck traffic demands, ADOT has implemented FAST lanes to reduce traffic queues at border crossing locations, online permitting systems, and has recently turned attention to developing VWSs. Five VWS facilities will be completed within two weeks; potentially non-compliant drivers will be directed, via radio communications, to enter the facility and park. The driver can then access an "ATM" station that performs the same transactions that a fully-staffed facility could perform. As early as September 2008, bridge construction near Hoover Dam will be completed, significantly increasing the volume of truck traffic coming through the existing Kingman POE. VWSs are being considered for routes leading to and from Kingman to help manage the increased demand. WIM systems are being installed on both sides and all four lanes between Tucson and Phoenix.

## **WASHINGTON STATE FREIGHT MANAGEMENT ISSUES**

Mr. John Nicholas, Washington State Patrol (WSP) provided an overview of Washington's vehicle size and weight enforcement procedures and technologies.

In 1955, Washington's commercial vehicle program was initiated, comprising both limited law enforcement officers and fully commissioned law enforcement officers with a goal of safe transportation of all commodities in interstate and intrastate commerce. Today, the program includes approximately 234 officers and staff (the program is authorized for 269 full time employees for the division but multiple vacancies currently exist). All commercial vehicle enforcement officers are armed in response to Labor and Industry initiatives to enhance officer safety.

WSP personnel are responsible for:

- monitoring driver qualifications,
- performing equipment inspections (in 2006, WSP performed over 126,000 Level I, II, and III CVSA inspections),
- performing HAZMAT inspections (all personnel have taken CVSA 40-hour HAZMAT inspection class),
- conducting compliance reviews and safety audits (since assuming in 1996, WSP has collected over \$1 million in penalties for deposit into the highway account), and
- performing commercial vehicle incident inspections (involving fatalities or any serious injury or property damage).

WSP commercial vehicle personnel have also been active in focused efforts to improve school bus safety and to reduce aggressive driving:

- Every school bus in the state is inspected at least once per year with periodic surprise inspections. Fatality or injury school bus crashes have been prevented for 10 to 12 years.

- Under the Ticketing Aggressive Cars and Trucks (TACT) program, WSP troopers ride along with truckers and report violating cars to other troopers for enforcement action. This program is slated to be implemented nationally.

WSP's enforcement facilities include major 24-hour ports of entry and fixed scale facilities (49) on secondary highways. Major scale sites have recently been augmented with scale buildings and underground pits in the inspection lane to allow easier vehicle access by inspectors. At sites where full-fixed scale facilities are not warranted, but high traffic volumes challenge the use of portable scales, "plug-in" scale facilities have been developed. Plug-in scales rely upon shallow-pit, load cell sensors. Portable scales are used where traffic volumes are sufficiently low.

A new POE is being constructed in Spokane, at a cost of \$16 million, which will serve I-90 traffic coming in from Idaho and I-82 from Oregon. The high cost of this traditional facility is focusing Washington's attention on the use of less costly technology to improve the efficiency and effectiveness of enforcement. Similarly, the inadequacy of secondary highway facilities to accommodate increasing traffic volumes and the associated costs of upgrading these facilities is also supporting an increased focus on technology. WSP is challenged to budget for routine scale maintenance and replacement costs. To address an eastward geographic shift in Canadian industry, Sumas is being considered as a possible site for a Heavy Goods Vehicle control Center modeled after the Swiss facilities.

Washington served as a prototype for CVISN in the mid-1990s. Currently, 40% of truck traffic comes into CVISN weigh station; 60% bypasses. Approximately 17% of trucks allowed to bypass are equipped with CVISN transponders. Real-time WIM data is used to support additional prescreening. Washington is currently participating in an expanded CVISN program to enhance the ability to monitor the safety of trucks currently allowed to bypass.

## **SWISS HEAVY GOODS VEHICLE CONTROL SITES**

Turning attention to the Swiss Heavy Goods Vehicle (HGV) Control Sites, Mr. Willie Burgunder, Deputy Director, Swiss Federal Roads Agency, described the role of HGV control sites in supporting longer-term transport policies in Switzerland. Mr. Reto Habermacher, Police Commander in the Canton of Uri, then detailed the HGV control site currently under development in the Canton of Uri.

In an effort to achieve the Minister of Transport's desired competitive marketplace for rail and trucks, two aspects of control were considered: mobile controls and fixed HGV control sites. Existing strategies and facilities resulted in approximately 140,000 trucks controlled with a 20% infraction rate last year. The development of a network (to prevent detouring) of HGV control sites requires significant planning, construction, and financing. As such, conceptual planning for the facilities began immediately but the decision was made to focus initial efforts on enhancing mobile controls. Positive results related to enforcement efficiency from existing HGV control sites later shifted this priority to the development of additional HGV control sites in conjunction with mobile controls.

The Parliament allocated \$17 billion in highway funds for the development of more than a dozen Maxi (including full safety inspection facilities) and Midi (not including full safety inspection facilities) HGV control centers to be completed by 2015. These funds supported not only the construction of the facilities but also their operation by the Cantonal Police, supported through memorandum of understanding agreements. Political challenges centered on protecting Cantonal interests existed initially in establishing these agreements, but funding to support

operational tasks proved to be a good motivator for participation. An initial complex agreement for partnership was replaced two years ago with an acceptable simplified agreement. HGV control sites were strategically selected to prevent bypass and in immediate proximity of highway access to minimize potential delays to the trucking industry.

The trucking industry is generally supportive of these enhanced controls. Representative trucking organizations recognize the importance of ensuring that vehicles on the road are safe and that all companies are held to the same standards for performance.

### ***Canton of Uri Heavy Goods Vehicle Control Site***

Given the importance of Highway A-2 in supporting travel between Germany and Italy, the Canton of Uri was selected, over a competing canton, as a site for a Maxi HGV control center based on the limited opportunity for trucks to avoid the center. Truck traffic Highway A-4 can also be controlled through this center. The challenge in developing this site was the need to provide not only sufficient physical space to accommodate HGV controls, but additional space to support waiting area parking for the Gotthard Tunnel. The 70,000 square meter site ultimately chosen was ideal in terms of accessibility, economics, and ecology.

Every truck traveling north to south along the A-2 Highway must pass through this center. The center will serve to manage the interval feed system for the Gotthard Tunnel, as well as support HGV controls.

To support tunnel operations (and unexpected traffic interruptions), the Uri HGV control center can accommodate up to 750 parked trucks. The center will include complementary services such as restaurants, fuel stations, toilet facilities, etc. that are largely privately operated. Repair services will not be provided on-site. Drivers in need of repair services will be directed to off-site facilities approximately one-mile from the center. Depending on the time of day and the severity of the repair, the vehicle may be contained in the center's overnight parking facilities until it can be safely moved for repair. Overnight parking at the center is intentionally limited to 88 spaces. If a driver arrives at the center before 8:00 PM, typically he or she are not permitted to stay overnight unless the driver is over-tired or over allowable driving durations, or there is a problem with the vehicle.

Operationally, a bypass lane was constructed to route compliant heavy goods vehicles directly to the departure area where vehicles are held in preparation for the interval feed system. Separate lanes for empty and two-axle trucks, dangerous goods, etc. with unique departure and control signals route drivers and allow for improved management through the facility. Based on information obtained from dynamic weight and height sensors, police personnel will determine whether a vehicle will be directed to the departure area or the inspection area. HGV controls will also be performed on random samples of drivers, vehicles, and loads although trucks are not subjected to multiple controls on the same day. If a truck has already been inspected by mobile controls or at another control center, the driver can produce a card stamp to confirm prior control activity although enforcement personnel will still check driver condition to detect interim consumption of alcohol, drowsiness, etc.

Inspection facilities are divided into three areas: an administration complex, the police control area, and the technical inspection area.

Police controls consider general driver and vehicle credentials and condition. If no problems are observed, the driver and vehicle are directed to the departure area. If a minor infraction is observed, the information is entered into a database, the driver pays the fine, and is released. If the infraction is significant, the driver is directed to park the vehicle, enter the administrative

complex, and is provided further direction for control. Center managers are full capacity police officers to support arrest or other necessary actions; control staff include unarmed civilian employees of the Cantonal Police. The center is designed to accommodate 150 full controls per day; with increased contacts if more limited controls are performed.

If a technical inspection is required, the driver and vehicle are directed to these facilities, where the process may take several hours (one hour minimum) to several days. Technical inspections consider brakes, wheels, exhaust, etc. and are typically performed in an inspection pit. The technical inspection area is networked with the police control area. In Switzerland, technical controls are required once per year (similar to the annual Federal inspections required in the US).

At full operational capacity, anticipated in 2011, the Uri HGV control center will support a 52-person workforce and will operate Monday through Saturday from 4:30 AM to 11:00 PM, excluding public holidays. Enforcement personnel will also periodically “surprise” drivers with middle-of-the-night or Sunday operations.

Final costs of center developments are estimated as follows:

Construction costs	\$54 million (supported by highway capital funding)
Operational installations	\$5.5 million (supported by heavy truck taxes)
Annual operating costs	\$5.75 million (supported by heavy truck taxes)
Annual revenue	\$5 million (returned to the Canton of Uri)

Construction of the site, which is now complete, was financed by the Confederation through the Swiss Federal Roads Agency but performed by the Canton of Uri. Construction design considered aesthetic appeal, snow clearance, drainage, and conservation of existing bodies of water. Ongoing operation of the center will be provided by the Uri Cantonal Police and financed through heavy truck taxes. Facility maintenance will be managed by the Confederation through the Swiss Federal Roads Agency and performed by a contracted third party.

## **KEY DISCUSSION POINTS**

Key discussion points throughout the Swiss heavy goods vehicle control sites peer exchange meeting centered on issues regarding enforcement technologies and procedures, as well as funding opportunities.

### ***Enforcement Technologies***

Technology-related discussions focused primarily on challenges to U.S. deployments:

- The European design of the software interface to support real-time prescreening was favored over U.S. versions. The display includes a video image of the vehicle and a graphical representation of the weight status. For example, weight status in Arizona is reported using numeric values instead of a graphical representation. Washington’s interface provides a separate video image linked by a WIM record identifier, which has proven effective in confirming truck identity if a citation is disputed in court.
- Optical character recognition (OCR) systems are challenged with respect to readability by varying vehicle identifier (i.e., USDOT numbers) formats and locations. In addition,

- Regarding the Swiss vehicle profile scanner, concern was expressed over potential vehicle hits to the gantry. A related issue was raised regarding the installation of overhead variable/dynamic message sign structures along oversize/overweight designated routes.

Design/build/maintain contracts were noted to have several benefits for WIM system installations. Separate design stages and consultants for “cookie cutter” WIM systems can be avoided through design/build contracts, significantly reducing the overall costs for implementation. Including a maintenance component to the contract shifts the responsibility for calibration to the system vendor.

### ***Enforcement Procedures***

Unique to the U.S., specific procedural challenges related to Prepass/Norpass pre-clearance partnerships were raised:

- Under current partnership agreements in Arizona, enforcement officials are not permitted to direct a PrePass participant through the facility if supporting data suggests a “green light” indication (i.e., enforcement officials cannot currently perform random checks). Arizona is currently in the process of negotiating a new agreement that would provide ADOT with the authority to direct any truck into the facility. Prepass is hesitant to concede this authority but a lack of cooperation may ultimately affect the ongoing partnership.
- Another instance was described where Prepass partnership agreements precluded the limited-time use of video to support a weigh station facility evaluation in Montana.

### ***Public/Private Funding***

Significant discussion occurred regarding the deposit of administrative penalties/citations from enforcement actions into a general transportation fund with no dedicated return to vehicle size and weight enforcement programs.

- Following a log truck-involved crash that killed two prominent scientists from the University of Washington, the Washington State Patrol (WSP) proposed legislation that would dedicate a portion of the monies provided to the WSP to commercial vehicle enforcement efforts. Initially, the dedicated deposit of administrative penalties/citations resulting from compliance review actions was considered as a source of funds, but concern was expressed over the resulting perception of “filling coffers” with the assessed penalties.
- A strong partnership between WSP and the Washington State Department of Transportation, evidenced through a detailed Joint Operational Plan, was cited as beneficial when making legislative requests for funding, particularly for large-scale vehicle size and weight enforcement facilities.
- The scope of impact and subsequent funding responsibility of large-scale vehicle size and weight enforcement facilities was also considered. Broader freight mobility benefits

## **CLOSING REMARKS AND SESSION WRAP-UP**

At the end of the day, Mr. Tom Kearney, FHWA, provided closing remarks for the Swiss Heavy Goods Vehicle Control Sites Peer Exchange Meeting noting:

- the range in implementation options for Swiss HGV control centers; observing the lower-end implementation options during the 2006 Scan Tour and learning of the higher end implementation options in the Canton of Uri and
- that U.S. officials are not provided enough opportunity to convene and discuss vehicle size and weight management issues.

Mr. Kearney closed the meeting by thanking the presenters and attendees for making the event a success, with a special thank you to the Swiss delegates in attendance.

## APPENDIX A

### SWISS HEAVY GOODS VEHICLE CONTROL SITES MEETING

GLENDALE, ARIZONA

FEBRUARY 19<sup>TH</sup>, 2008

9:00 AM TO 4:00 PM

#### AGENDA

- |       |               |   |
|-------|---------------|---|
| I.    | 9:00 – 9:15   | <b>Welcome/Introductions –</b><br>Arizona Highways Representative will welcome the group and provide opening remarks;   |
| II.   | 9:15 – 9:45   | <b>Overview of FHWA Truck Size &amp; Weight Program --</b><br>FHWA's Office of Freight Management & Operations will provide an overview of the Size & Weight Program with a focus on automated approaches to enforcement;   |
| III.  | 9:45 – 10:30  | <b>2006 European Truck Size &amp; Weight Technologies Scan –</b><br>Members of the 2006 European Scan will present findings from Scan and Status of Implementation;   |
| IV.   | 10:30 – 10:45 | <b>Break</b>  |
| V.    | 10:45 – 11:30 | <b>Overview of Freight Management Policy in Switzerland –</b><br>Willie Burgunder, Deputy Director, Swiss Federal Roads Agency, will provide an overview of transport policies and emerging issues in Switzerland and freight challenges across Europe;                           |
| VI.   | 11:30 – Noon  | <b>Swiss Truck Enforcement Policies and Practices –</b><br>Reto Habermacher, Canton Uri Police Commander, will present enforcement issues challenging Switzerland and will also enforcement coordination among various European Police Agencies;                                  |
|       | Noon – 1:00   | <b>Lunch Break</b>  |
| VI.   | 1:00 – 1:20   | <b>Arizona Commercial Vehicle Enforcement Program Overview</b><br>Arizona Motor Vehicle Division will present an overview of its truck enforcement program and emerging issues;   |
| VII.  | 1:20 – 1:40   | <b>Washington State Freight Management Issues –</b><br>Department of Transportation and Highway Patrol representatives will discuss freight mobility issues in the Northwest US including coordination on freight activities at the international border with Canada;             |
| VIII. | 1:40 – 2:45   | <b>Presentation of the Swiss Heavy Goods/Vehicles Control Sites –</b><br>Our Swiss guests will present the various aspects of the Control Sites used in Switzerland to expeditiously enforce size, weight and vehicle safety laws and regulations;                                |
| IX.   | 2:45 -- 3:00  | <b>Break</b>  |
| X     | 3:00 -- 3:45  | <b>Open Discussion on: Truck Enforcement Issues, HGV's and Weight Stations, Technology Based Solutions to Efficient Enforcement –</b><br>A facilitated opportunity for participants to direct questions on any of the day's topics or presentations through a facilitated format; |
| XI    | 3:45 - 4:00   | <b>Closing Remarks and Session Wrap-up –</b><br>FHWA will look back over the day's discussions and close the session.   |





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