



**EHS BEST PRACTICE  
BP/1.12**

**EHS BEST PRACTICE FOR BEHAVIOR BASED SAFETY  
GUIDELINES FOR SAFE DRIVING OF PETROLEUM ROAD  
TANKERS**

JUNE 2016

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## Acronyms

Acronym	Description
BBS	Behavior Based Safety
BP	Best Practice
CSR	Corporate Social Responsibility
ERC	Energy Regulatory Commission
HSE	Health, Safety and Environment
HSE BP	Health, Safety and Environment Best Practices
KPI	Key Performance Indicator
OMC	Oil Marketing Company
RTS	Road Transport Safety
RTS MS	Road transport Safety Management System

## **1. Introduction**

- 1.1. These Health, Safety and Environment Best Practices (HSE BPs), herein referred as “Best Practices (BPs)”, are guidance to Health, Safety and Environment (HSE) Practices for Behavior Based Safety – Guidelines for Safe Driving of Petroleum Road Tankers and are produced by the Energy Regulatory Commission (ERC) in consultation with the National Transport and Safety Authority (NTSA), National Environment Management Authority (NEMA), Directorate of Occupational Safety and Health Services (DOSHS) and the Oil Industry in Kenya.
- 1.2. Oil Marketing Companies consider safe transportation of their products as an integral part of Community Social Responsibility.
- 1.3. Continuous efforts to improve road transport safety are should therefore be part of the overall aim to improve safety performance of both the Oil Industry and the Transport Industry.
- 1.4. The benefits that come from improved HSE performance include decreased costs and increased employee satisfaction.
- 1.5. This document is intended for information only and sets out guidelines for the safe driving of petroleum road tankers.
- 1.6. The information contained in these Best Practices is provided in good faith and, while it is accurate as far as the ERC is aware, no representations or warranties are made with regards to its completeness.
- 1.7. It is not intended to be a comprehensive guide to all detailed aspects of road safety.

## **2. Objective**

- 2.1. The HSE BPs on Road Transport is a guidance document describing behavior Based Safety Guidelines for Safe Driving of Petroleum Road Tankers.

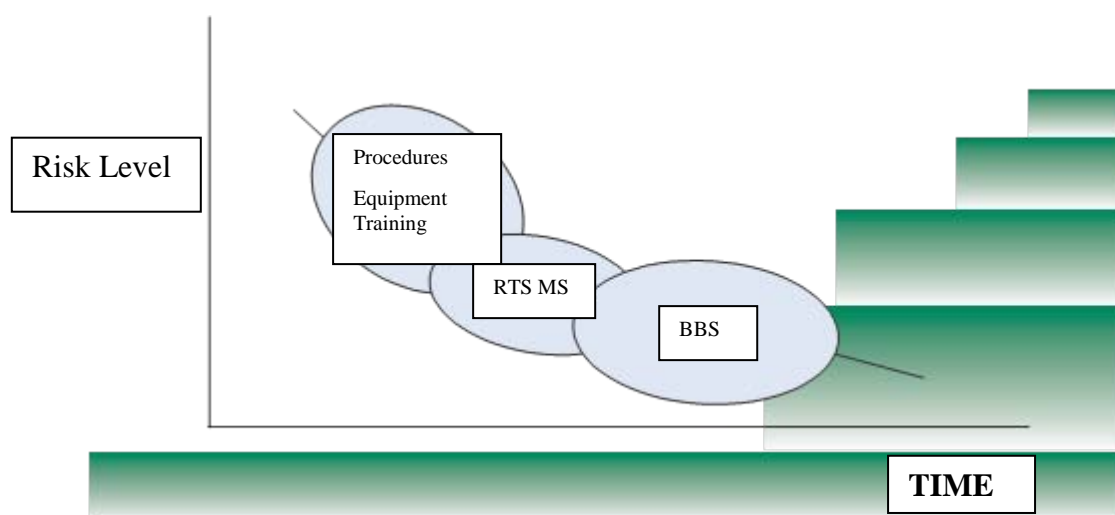
## **3. Scope**

- 3.1. BBS aims at increasing safety during road transport by positively influencing the behavior of drivers through observation, coaching and communication.
- 3.2. The BBS Program is not intended to be a one- off exercise, but it should rather become a continuous effort by every individual transport company.

- 3.3. It is expected that BBS will not only improve safety performance but will also have a positive effect on fuel consumption and other related costs such as maintenance costs and insurance premiums, ultimately improving total cost-effectiveness of the transport companies.

## **4. Risk Reduction**

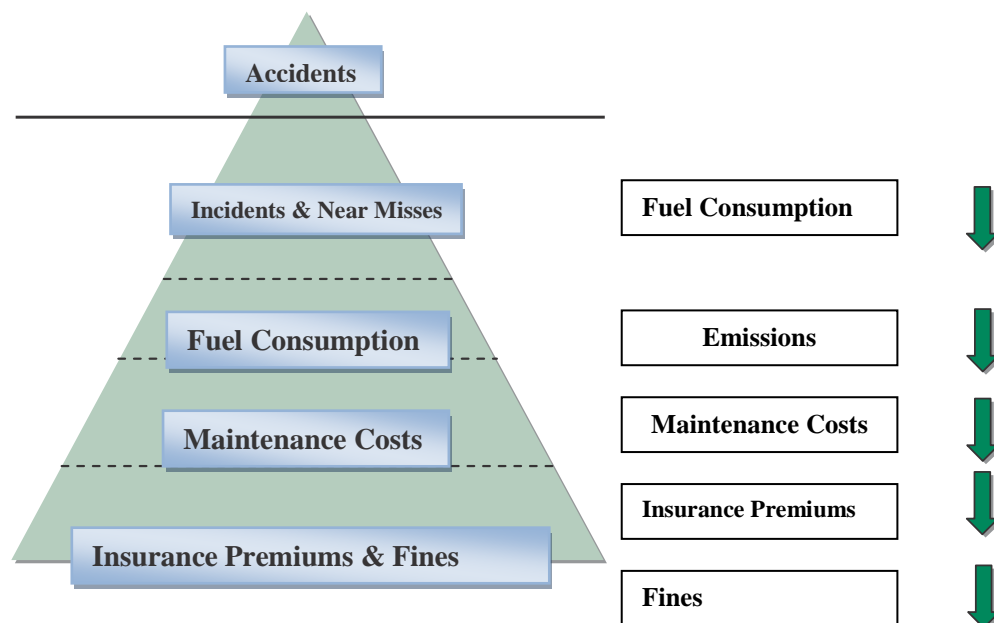
- 4.1. Some OMCs have for years been involved in promoting projects with the transport companies, aimed at improving road transport safety.
- 4.2. Some Transport Companies working for the Oil Industry have invested in documented management systems and procedures, improved equipment and training programs, leading to a decrease in the number of road transport accidents.
- 4.3. Full implementation of RTS Management Systems has improved the safety performance of petroleum products transport operations.
- 4.4. However, this trend has halted in the last few years, with the annual accident statistics of individual companies showing signs of stabilization or even an increase in the number of road transport accidents.
- 4.5. Due to the increases in transport volume and in work pressure, and also because of general behavioral changes, the demands on drivers of petroleum road tankers are now much more complex and pressing than in the past.
- 4.6. In the short to medium term, substitution of road transport on a significant scale by other modes is not envisaged.
- 4.7. In order to provide a new stimulus for further reducing the number of road transport accidents during petroleum products transportation, OMCs and Transporters should take the initiative of promoting the wider implementation of the principles of Behavior Based Safety (BBS) in the safe driving of petroleum road tankers.



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- 4.8. A number of individual transport companies have already developed management systems and training programs with links to BBS.
- 4.9. In order to come to a standardized and consistent approach across the Oil and Transport Industries, the following guidelines provide the framework for HSE BPs.
- 4.10. These HSE BPs are intended to give a clear and concise outline of how to improve a company's road transport safety performance through BBS, while also demonstrating that safety and economic interests go hand in hand for all parties involved.

## 5. Benefits of BBS/ Iceberg Principle



Caption

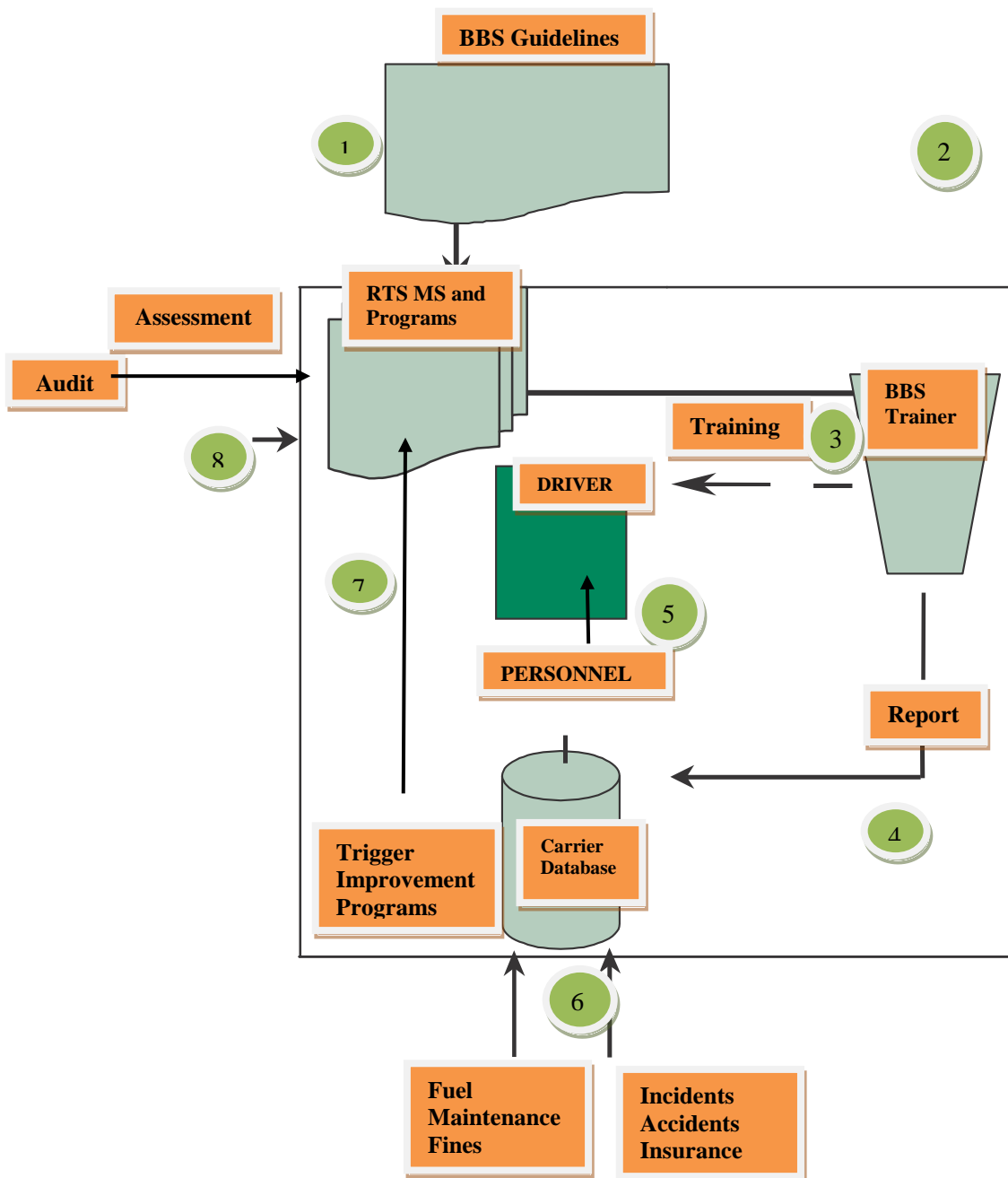
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## 6. Process

- 6.1. No relationship of BBS to other aspects such as training etc
- 6.2. The process for implementing BBS should reside in the carrier's organization as an important element of the continuous improvement program.
- 6.3. It should include the following steps:
  - The company management develops a BBS Implementation Plan and Training Program based on the principles described in the HSE BPs.
  - BBS Trainers are recruited (internally or externally) and obtain training in accordance with the principles set out by the HSE BPs.
  - BBS Trainers provide individual training to drivers.
  - BBS Trainers produce an assessment report for each trained driver, which is kept on file and/or may be incorporated into a database.



- The drivers obtain a copy of their assessment report and may consult the filing system for their individual records.
- The company keeps records of performance indicators such as incident/accident statistics, fuel consumption, maintenance costs, insurance premiums and fines.
- Analysis of the results of the BBS Program by the management will provide a useful tool in deciding on further steps toward continuous improvement.



## **7. RTS Management System**

### **Policy**

- 7.1. Successful implementation of BBS requires a top-down management approach.
- 7.2. The company's policy must not only reflect the importance of BBS but also the commitment of the management.
- 7.3. BBS must be fully integrated in the carrier's organization and management systems.
- 7.4. It needs to become an integral part of the company's culture and be one of the key drivers for continuous performance improvement through the implementation of KPIs.

### **Key Performance Indicators**

- 7.5. Accident/Incident Statistics
- 7.6. Fuel Consumption
- 7.7. Maintenance Costs
- 7.8. Emissions
- 7.9. Insurance Premiums
- 7.10. Fines

### **Responsibilities**

#### **Management**

- 7.11. Management should:
  - Prepare a document describing the company's planned approach towards BBS including all components.
  - Communicate this plan to all personnel involved and review it at least annually.
  - Develop a BBS Training Program.
  - Initiate, implement and provide ongoing support for the BBS Program.
  - Define roles, deliver resources, resolve issues and remove barriers for a successful implementation.
  - Set targets, monitor status and results.
  - Keep records of KPIs

- Manage the improvement process based on BBS data analysis.

### **Dispatch/Planners**

- 7.12. Dispatchers/Planners should:
- 7.13. Understand and support the BBS Program.
- 7.14. Avoid planning and instructions that conflict with the BBS principles (e.g. unrealistic delivery times).

### **Trainers**

- 7.15. Trainers should:
- 7.16. Execute the BBS Training.
- 7.17. Observe and interactively communicate the findings with the driver.
- 7.18. Collect data and report results to management.
- 7.19. Identify and report any issues that need to be followed up by driver or management (confidentiality of private information to be guaranteed).

### **Drivers**

- 7.20. Drivers should:
- Understand the purpose of the BBS Program and be committed to participate.
  - Discuss performance weaknesses with the Trainer and help in finding solutions.
  - Implement preventative changes as a result of the BBS analysis.

### **Record Keeping**

- 7.21. Driver records, along with the individual training observations and checklists, should be collated by the carrier into an efficient storage and retrieval system (database and/or filing system).
- 7.22. Drivers should have the possibility of obtaining a copy of their personal record as a reminder/learning tool for continuous improvement.
- 7.23. Other key performance indicators such as incidents/accidents statistics, fuel consumption, maintenance costs, insurance premiums and fines should be identified, monitored and recorded to demonstrate and follow up the results of the program.

### **Analysis**

- 7.24. Management should use the collected data to identify structural trends and issues.

### **Follow Up/Corrective Actions**

- 7.25. Results of analyses should trigger corrective actions to processes, safety programs and employees.
- 7.26. The effect of implemented corrective actions should be monitored through the key performance indicators.

## **8. Training Program**

### **General Training**

- 8.1. The purpose of the general training is to inform and engage transport management and planners about the BBS Program.
- 8.2. To generate maximum benefit for the carrier, it is important that management and operational staff fully understand how their role and behavior may directly affect the behavior of the driver (e.g. By avoiding extended working hours, rush-orders, delayed/late instructions, unrealistic delivery times, etc.).
- 8.3. This training can be provided in the form of a guidance document.

### **Driver Training**

#### **Format**

- 8.4. The form of this training is totally interactive. It is carried out on a one-to-one basis between the trainer and a driver. The training should also comply with legal requirements set out by the National Transport Safety Authority.
- 8.5. The trainer should observe the driver while driving and maneuvering on the road. The purpose is to assess individual strengths and weaknesses, and address behavioral driving skills that will benefit from improvement.
- 8.6. Behavior that may lead to an unsafe situation or condition should be corrected by interactive communication between the trainer and the driver.
- 8.7. Trainers should have the skill to convince the driver of the unsafe situation and to show him how to prevent or to anticipate this.

#### **Characteristics**

- 8.8. A successful BBS Safety Training Program needs to focus on driving.
- 8.9. The trainer should take the driver onto the road and check/observe a number of key performance criteria including:

- Concentration, observation and anticipation.
  - Driving skills as applied to all aspects of driving.
  - Vehicle control and observation techniques.
  - The principles of accident avoidance.
- 8.10. Throughout the on-the-road assessment, the trainer should positively influence the behavior of the driver by observing and providing clear feedback on the observations.
- 8.11. Preferably the route should be familiar to both the driver and trainer. It is recommended that a standard delivery route be taken so that the driver is as relaxed as possible. This approach is more likely to reveal how the driver would perform when driving alone.
- 8.12. In the review at the end of the training session the following aspects should be included:
- A positive critique to provide guidance and advice, with a final debriefing to complete an individual risk profile. The trainer should stress the positive aspects while identifying areas for improvement.
  - An individual improvement plan for each driver, paying attention to any specific observed performance weaknesses he/she may have.
  - An assessment of the driver's overall ability.
- 8.13. It is important to develop a single training program. It is not advisable to have different training programs for the original induction training and the refresher training. A single well specified, targeted training should meet both requirements.

### **Driver Profile**

- 8.14. Before the start of the training a complete profile of the driver should be made available to the trainer.
- 8.15. This driver profile should contain details of the following :
- Age
  - Years of Service
  - Driving License
  - Eyesight
  - Previous Experience
  - Driving related fines and convictions
  - Safety Record
  - Previous BBS Training Record including risk profile and agreed action plan

## **Training Agenda**

### **Verbal Introduction (15-30 Min)**

- 8.16. Introduction
- 8.17. Schedule of the Training Day
- 8.18. Informal Conversation
- 8.19. Experience in Different Areas (Oil Industry, Routes, Petroleum Products, Years of Experience, Types of Vehicles, etc)
- 8.20. Company Rules
- 8.21. Observation of Mental State
- 8.22. Social Behavior
- 8.23. Review of the last BBS Training Session if applicable

### **Reflection About**

- 8.24. Causes of the most frequent accidents
- 8.25. Effects of fatigue and stress on the behavior of the driver
- 8.26. Impact on driving of prescribed medicines, tobacco, alcohol, narcotics and other drugs to prevent sleep and drowsiness
- 8.27. Highway code and transport signs
- 8.28. Maximum fuel efficiency

### **Circle Check (15-30 Min)**

- 8.29. Outside vehicle check:
  - General vehicle characteristics
  - Tyres
  - Tightening of wheel-nuts
  - Lights
  - Oil
  - Water
  - Fire Extinguisher(s)
  - Truck Equipment
  - Outside cleanliness
- 8.30. Inside vehicle check:
  - Visibility check (including dead-angle camera/mirror and any obstructions of the line of sight)
  - Truck Equipment
  - Equipment specially needed for specific type of work

- PPE
- Documents
- Fuel
- Dashboard Check
- Safety Belt
- Inside cleanliness
- Air-conditioning
- Music (there must be no possibility of changing CDs whilst driving)
- Adjusting of the seat/steering wheel to correct and make comfortable posture

8.31. Trailer check:

- General trailer characteristics
- Coupling/uncoupling
- Documents
- Tyres
- Lights
- Air/Electrical
- Twist-locks

**Driving (120 Min)**

8.32. Individual training for each driver paying particular attention to any specific problems he or she may have (with continuous interaction between driver and trainer).

8.33. Conditions / situations:

- Maneuvering
- Lane Changes
- Crossings
- Turning
- Approaching and being passed
- Join/exit transport flows
- Behavior on and nearby special road parts
- Road surfaces and weather conditions
- Using the gearbox, clutch and brakes
- Trailer stability

- Leaving the vehicle

8.34. Observations/Behavioral Skills :

- Attitude (polite / aggressive)
- Concentration
- Involvement
- Awareness
- Observation Skills (mirror usage)
- Hazard Perception
- Vehicle Control
- Positioning
- Separation Distance (braking distances and safety distances)
- Speed Adaptation (including use of brakes, engine brake, cruise control)
- Defensive Driving (anticipating transport situations and other road users)
- Seat Belt (usage, adjustment)

**Maneuvering (60 Min)**

8.35. Preparing to manoeuvre (positioning of the vehicle)

8.36. Special manoeuvres (loading/unloading stations)

8.37. Driving backwards (with a turn and in straight line)

8.38. Observation/vision

8.39. Parking of the vehicle

**Debriefing/Communication of Observations**

8.40. Overall evaluation of the course/day

8.41. Verification of checklist and observations (explanation of both positive and negative remarks)

8.42. Identification of areas for improvement and suggested action(s)

8.43. Remarks by the trainee (critique of the course) and signature by the trainee of the evaluation report

8.44. Issue of final report by trainer (sent to the line manager of each trainee)

**Duration/Frequency**

8.45. The training will take not less than half a day.

8.46. The frequency may vary between once every 1 to 3 years depending on the annual performance review of each individual driver.



- 8.47. One must take into account that the first training has the highest impact and will be of most benefit to the driver.

## 9. Trainer Qualifications

- 9.1. A successful program depends heavily on the skills of the trainer.
- 9.2. The original selection of the trainer is therefore critical.
- 9.3. Trainers can be recruited internally or externally.
- 9.4. In case of internal trainers it is advisable that they have an independent position and relationship with the drivers.
- 9.5. Training of direct colleagues should be avoided.
- 9.6. From practical experience within the road transport industry, it is estimated that approximately one in ten experienced drivers have the necessary communication skills, experience, technical knowledge and respect of their peers, to become a successful trainer.
- 9.7. Trainers must fulfill the following requirements:
- Be an experienced driver in the type of vehicle used during the training
  - Have a good reputation and be well respected amongst peers
  - Have several years' experience with local or international transport
  - Have excellent interpersonal skills
  - Be objective and independent
  - Have thorough knowledge of the national and international transport regulations and legislation
  - Have knowledge of the BBS Concept
  - Have recognized technical knowledge
  - Have an excellent safety record.
  - Have a good reputation and lead by example
  - Have good reporting skills
  - Have the support and acceptance of Management
- 9.8. Trainers should obtain an extensive training on the content, objectives and requirements of the carriers' BBS Implementation Plan and Driver Training Program.

## 10. BBS Assessment Questionnaire

- 10.1. The BBS Concept will be fully integrated into the RTS MS Continuous Assessment Questionnaires.
- 10.2. Specific questions related to BBS will allow the Assessor to assess the implementation of the BBS Program.

### Implementation Template/ Gap Analysis

- 10.3. The Implementation Template is a useful tool for the carrier to assess gaps in an existing BBS Program or to facilitate the implementation of a new BBS Program.

Carrier Company:		Date:
BBS Implementation Gap Analysis Question	Response (Yes/ No)	Actions to be taken if answer is "No"
<b>1. Notification/Orientation</b>		
1.1	Is the BBS principle understood and accepted as an additional program to improve safety performance?	Ref : BBS Introduction
1.2	Is the company aware of the proven results of other companies?	Ref : Benefits/Iceberg Principle
1.3	Is management committed to a successful implementation of BBS?	Ref : Management System/ Policy
1.4	Is the BBS process embedded as an integral part of the companies' management system and programs?	Ref : Process
1.5	Have the needed resources (people and financial) been estimated and assigned to BBS?	Ref : Management System/ Responsibilities
1.6	Are barriers identified, removed or anticipated?	Ref : Management System/ Responsibilities
1.7	Does management drive and maintain a company culture in line with BBS principles?	Ref : Management System/ Policy
1.8	Are goals and targets set and communicated in relation to the BBS program?	Ref : Management System/ Policy
1.9	Has an implementation leader been assigned?	Ref : Management System/ Responsibilities

Carrier Company:		Date:	
	BBS Implementation Gap Analysis Question	Response (Yes/No)	Actions to be taken if answer is "No"
<b>2. Implementation</b>			
2.1	Has a project implementation plan been set up with targets and timeline?		Ref : Steps defined within this "BBS Implementation Template"
2.2	Has training been given to ancillary and administrative staff on BBS principles?		Ref : General training
2.3	Has initial training been given to all drivers?		Ref : Driver training
2.4	Are the trainers qualified as outlined in the BBS guideline?		Ref : Trainer Qualifications
2.5	Have critical behavior aspects/items been defined with desired performance?		Ref : Training Agenda
2.6	Do the drivers have the opportunity to add critical driving behavior issues to the training content?		Ref : Training Agenda
2.7	Has a training content been developed?		Ref : Training Agenda
2.8	Has the training frequency and duration been defined?		Ref : Duration/Frequency
2.9	Is BBS set up as a continuous program?		Ref : Process
2.10	Has a training plan been set up with individual names and dates?		Ref : Duration/Frequency
2.11	Is a record filing system set up to file individual training record sheets?		Ref : Record Keeping
<b>3. Data Collection and Reporting</b>			
3.1	Is the progress of BBS program/project reported to the drivers?  If yes, how and what is the frequency?		Ref : Process
3.2	Are key performance indicators such as accidents, fuel consumption, maintenance costs and fines identified and measured?		Ref :Record Keeping
3.3	Can an individual driver look up his individual record on accidents,		Ref : Record Keeping

Carrier Company:			Date:
	BBS Implementation Gap Analysis Question	Response (Yes / No)	Actions to be taken if answer is "No"
	fuel consumption, maintenance costs, and fines?		
3.4	Have the overall results and trends of accidents, fuel consumption, maintenance costs and fines been reported to the drivers since the start of BBS?		Ref : Process
3.5	Are individual training record sheets kept at the central record filing system?		Ref : Record Keeping
3.6	Can an individual driver look up his individual training record sheet?		Ref : Record Keeping
3.7	Can structural trends / issues be retrieved from the central filing system?		Ref : Analysis
3.8	Are structural behavioral trends and issues reported to the drivers?		Ref : Process
3.9	Are structural trends and issues analyzed to find causes? If so what process has been used?		Ref : Analysis
<b>4. Follow Up/Corrective Actions</b>			
4.1	Are individual actions agreed with individual drivers?		Ref : Characteristics
4.2	Is a tracking system in place to follow up agreed individual driver actions?		Ref : Driver Profile
4.3	Have corrective actions been defined based on the analysis of the BBS measurements?		Ref : Analysis
4.4	Are corrective measurements implemented?		Ref : Analysis
4.5	Has the effect of corrective measurements been evaluated after implementation?		Ref : Analysis
<b>5. Overall Project Evaluation</b>			
5.1	Are the key performance indicators showing an improvement since the start of the program?		
5.2	Do the results reflect the desired targets?		

Carrier Company:		Date:	
	BBS Implementation Gap Analysis Question	Response (Yes / No)	Actions to be taken if answer is "No"
5.3	If the BBS Program has not been successful, have corrections been made to the BBS Program?		
5.4	Has the BBS Program been assessed by External Parties?		

## 11. References

- 11.1. BBS - A Union Viewpoint from [www.ohsrep.org.au](http://www.ohsrep.org.au)
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- 11.4. From the US Steelworkers' Union report, 'Not walking the talk: DuPont's untold safety failures'([www.dupontcouncil.org](http://www.dupontcouncil.org)) on the real OHS performance of DuPont - creators of one of the world's most widespread Behavior Based Safety Programs, STOP.
- 11.5. Hazards Magazine ([www.hazards.org/bs](http://www.hazards.org/bs))
- 11.6. LabourStart [www.labourstart.org](http://www.labourstart.org)