



Department of Health & Safety		Policy NO.		FCX – 16	
		REVISION NO.		4	
		SUPERSEDE		Ver 3, Aug 2014	
Bus Safety Policy		TASK CLASSIFICATION		<div>X</div>	Highly Critical
				<div></div>	Critical
				<div></div>	Non-Critical
APPROVAL DATE – December 2014		ORIGINAL DATE – May 2012		RELEVANT SOPS – N/A	

1. PURPOSE AND SCOPE

This policy defines minimum requirements for the transportation of large groups of passengers and optional best practices. This document applies to any vehicle with a capacity of 16 passengers or more that is used under any of the following conditions:

- Used on FCX property
- Used to transport FCX employees and contractors to/from FCX property or projects
- Used to transport visitors on FCX properties
- Used in any capacity under an FCX contract (such as FCX-sponsored services to transport members of the public through or around FCX operations, or the transport of family members of employees)

Company locations must also review all applicable regulations, which may impose stricter requirements which would be dependent upon the road conditions. Such as:

- Road design (drainage / road width / berms / guardrails / curves / supers)
- Surface road condition (dry & dusty / wet & slippery / icy)
- Surface road material (clay / rock / concrete / asphalt)
- Steepness of the terrain (ascents / descents)
- Road usage (number of equipment pieces sharing the same road during peak periods / equipment congestion)
- Road maintenance (planned maintenance schedule / suitable and available dedicated equipment assigned to regular road maintenance program)

2. DEFINITIONS

- **Company** – FCX operation or project that is using a bus service to transport employees, contractors, and/or visitors
- **Operator** – Entity that is operating a bus service
- **OEM** – Original Equipment Manufacturer



3. BUS CONSTRUCTION AND SAFETY DEVICES

- Seatbelts must be available for each passenger and used. Passengers will not be allowed to stand in aisle ways during transport.
- The driver's cab and passenger cabin must be designed and constructed in a manner that protects all personnel in the event of a roll-over. Buses must meet one of the following standards for roll-over protection:
 - The proposed United States Standard - 49 CFR Part 571 - [Docket No. NHTSA-2014-0085] - RIN 2127-AK96 - Federal Motor Vehicle Safety Standards; Bus Rollover Structural Integrity, Motorcoach Safety Plan (<https://www.federalregister.gov/articles/2014/08/06/2014-18326/federal-motor-vehicle-safety-standards-bus-rollover-structural-integrity-motorcoach-safety-plan>)
 - The existing United States standard for school buses – 49 CFR 571.220 - Standard No. 220; School bus rollover protection. (http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=92692a8241997763f0522842288218b6&ty=HTML&h=L&r=SECTION&n=se49.6.571_1220)
 - The European Standard - UN Regulation 66 (<http://globalautoregs.com/rules/77>)
 - The Australian Standard - Vehicle Standard (Australian Design Rule 59/00 – Standards For Omnibus Rollover Strength) 2007 (<http://www.comlaw.gov.au/Details/F2007L04077/Explanatory%20Statement/Text>)
- Adequate emergency exits must be available to allow prompt evacuation of all passengers regardless of which surface the bus is resting upon
- Brakes, suspension, steering, and powertrain must be appropriate for the grades and road conditions where the bus will be used
- Tires must be appropriate for road surfaces, grades, loads, and foreseeable weather conditions
- Remote operated passenger doors must be equipped with operational controls that can be manually operated from inside by passengers or outside by any persons assisting in an emergency evacuation
- Hand held fire extinguishers must be made available to Operators and passengers
- Buses used on steep grades (over 5%) must be equipped with an automatic transmission
- Manual or semi-automatic transmissions may only be used on grades less than 5%, where there is no risk of a runaway
- Buses operated on steep grades should be diesel powered and equipped with either engine or exhaust brakes
- Options to be considered for additional braking capacity used on steep grades are:
 - Factory OEM Engine brakes
 - Transmission input or output retarders
 - Drive Line Retarders



Optional Best Practices

- Speed governors, speed data-loggers, over-speed alarms, or GPS-based driver monitoring systems (e.g. *Inthinc*) should be considered for bus services where excessive speed is a risk
- DSS fatigue monitoring systems should be considered, particularly if drivers work extended and/or rotating shifts

4. INSPECTION AND MAINTENANCE PRACTICES

Pre-Operational Inspection Practices

- Drivers must conduct a thorough safety inspection prior to operating the bus, and must document this inspection on a checklist that is specific to the bus.
 - Timely corrective action must be initiated for any defect
 - The bus must not be operated if there is a defect that might impair safe operation; the inspection checklist must clearly indicate which defects would cause the driver to shut down the bus (including but not limited to inadequate brakes, steering, excessive tire wear, a single defective headlights, or multiple defective tail lights or side markers)
 - This pre-op inspection include all of the following:
 - Manufacturer's recommended items
 - Braking systems (service, retarder, and park), steering, driving & fog lights, brake lights, side marker lights, horn, wheels & tires
 - Air brakes will be tested before operation using the 7-Step Brake Test, except where the manufacturer's recommendations conflict with or exceed it: **(see attachment 3)**
 1. Air leak rate
 2. Low pressure warning device
 3. Spring brake engagement
 4. Air pressure buildup
 5. Air brake test
 6. Air compressor governor
 7. Service brake stopping action
 - Other failure-prone items that have been identified through Company's or Operator's experience
- Maintenance practices must meet or exceed manufacturer's recommendations in order to meet with FCX passenger bus compliance policies / procedures.
- Preventive maintenance practices and frequency must be guided by manufacturer's recommendations along with the severity of duty the buses are used for and failure experiences under similar conditions of use. Safety sensitive components will be replaced proactively based on expected service life under the conditions of use.
- Tires must be checked routinely for wear, not to exceed manufacturers specification



5. ADDITIONAL REQUIRED INSPECTIONS FOR GRADES IN EXCESS OF 10%

Planned regular component inspections need to be performed outside of the existing planned preventive maintenance service schedule, and the Operator pre-operational check and inspection procedure. Since it is recognized that a passenger bus is classified as a high risk transportation vehicle (due to the fact that in the case of an unforeseen incident the end result could be catastrophic) an additional safety check is performed in conjunction with the daily Lubrication Service / Check. While the passenger bus is parked over a lube-pit or rack, a complete inspection is performed of the final drive train, undercarriage structure, suspension, brakes, hoses, and fittings to ensure they are all 100% operational and functioning without fear of failure.

Auditing Practices

- The Company shall periodically audit a sufficient number of buses to ensure that adequate pre-operation inspections are conducted (both pre-operation and daily safety inspections), that safety sensitive equipment is in working order, and that the bus meets the requirements stated above under "Bus Construction and Safety Devices".
- The Company must periodically audit the Operator's maintenance practices to ensure that they meet manufacturer's recommendations and are appropriate for the conditions of use.

6. REQUIREMENTS FOR DRIVERS

- The Company and contacted service providers must establish a process to permit or license bus drivers. This must include training on safe operation, testing to confirm understanding, and observed safe practice by a competent person. It must also include a recurring process to re-permit or re-license drivers. Government-issued commercial driver's licenses for transportation of passengers may be used to meet part of this requirement, as long as the other requirements are met.
- Driver training must include the following topics:
 - A review of the information contained in Attachment #1
 - Safe driving practices for all foreseeable weather conditions for the region in which the bus will operate (e.g. rain, snow, ice, fog, dust, wind, as appropriate)
 - Company's traffic controls and communication methods, if the bus will be operated on FCX property



- Conducting an effective pre-operation safety inspection of the model of bus that will be used, and on the procedure for initiating corrective action. Prior to carrying passengers, the driver must demonstrate his/her competence by conducting a proper pre-operation safety inspection to a competent person
 - Safety and emergency systems on the model of bus that will be used
 - Fatigue management, consistent with the current FCX Fatigue Management Guideline (mandatory for drivers who work under the scope of this policy for three months or more per year)
 - Safe driving practices for all expected uphill and downhill grades. This is critically important when any expected grades are greater than 5%. Potential drivers must demonstrate the ability to select the proper gear for steep grades and an understanding of the consequences of selecting the wrong gear
- Drivers must have at least two years of experience operating equipment before being allowed to transport passengers in a bus
- Drivers must always wear seatbelts and maintain a safe driving record. Serious or repeated violations, or repeated incidents in which the driver's behavior was a contributing factor, will prompt the Company to revoke or suspend the driver's permit or license
- Drivers to complete an annual driver refresher course to reinforce and promote good driving practices, and to teach additional / revised training practices / methods that are directly associated with the immediate environment. Drivers will be tested on theoretical bus driving skill sets and actual driving practices to confirm each driver fully understands and comprehends the importance of his particular assigned roles and responsibilities
- Drivers must receive medical clearance biennially. Screening criteria will be determined by a physician, but must include at minimum:
 - No conditions that might cause the driver to become incapacitated (uncontrolled diabetes, epilepsy, critically high blood pressure, and similar)
 - Adequate vision and hearing
 - Physically fit to conduct a thorough inspection of the bus and respond to emergencies
- Drivers must participate in a drug & alcohol testing program, including pre-assignment, random (at least 20% probability per year), and post-incident (significant near miss, any collision, or unintentional off-road incident) testing
- Drivers' work schedules must comply with the current FCX Fatigue Management Guideline.
- Use of mobile communications devices (texting, cell phones, tablet devices and similar) is prohibited. Use of 2-way radios should be limited, and only push-to-talk radios are permitted. Drivers must move the bus to a safe location and stop in order to perform other activities (dialing a phone, programming a GPS, operating an entertainment system, and similar)
- Company will periodically audit drivers' performances



Optional Best Practices

- Various psychological tests are in use at some FCX operations to identify drivers who have attitudes that are conducive to safe bus operation.
- Drivers should be trained on basic first aid, CPR, and AED use.

7. PASSENGER ACCOUNTABILITY

- Company must establish a system to set expectations with passengers and hold them accountable for meeting these expectations
- Passengers must remain seated and properly use seatbelts while the bus is in motion
- Passenger cargo must be secured
- Passengers must respect the importance of the job of the bus driver and should not converse with the bus driver or otherwise cause distractions while the bus is in motion unless there is an immediate safety concern

8. ADDITIONAL REQUIREMENTS FOR GRADES IN EXCESS OF 5%

How to Establish SAFE Down Hill Descent Speed

The method used to determine a safe descent speed is by establishing the maximum speed a fully loaded bus can descend without the Operator having to use the service brake.

To achieve this objective, the bus Operator must select the lowest practical gear that will hold the bus speed as it descends without having to apply the service brake in order to slow down the speed of the bus while descending.

If the bus Operator finds that the service brake has to be applied continually during a descent, then the gear selected for the descent is too high, and the bus needs to be operated in a lower gear. The objective of selecting a lower gear is to refrain from using the service brake during the descent. Once the correct low gear has been selected it will hold and control the descent speed of the bus, the only time the service brake would need to be applied is if the bus needed to come to a complete stop or if it had to slow down to avoid hitting an object / obstacle stationed on the road ahead.

Signage

Once the Company has established the safe speed limit for the various descent sections of the road being traveled, signs need to be erected that inform / remind the bus Operator of the maximum descent



speed and gear selection required to descend the hill/s safely.

The safe gear selection for a descent may vary between bus models. It will depend upon the engine size, final gear ratio, weight and size of the bus. In the case where various brands of OEM buses are being utilized on site, the safe operating speeds and gear selections have to be established for each bus model. This means providing additional signage prior to descents for the various models of buses stating the safe operating speed and gear selections. The signage will act as a continual reminder to the bus Operator/s especially if the bus Operator has a multi-permit to operate various model buses that do require a different gear/speed during a descent.



Attachment 1 – ‘ROOT-CAUSE’ Steep Grade Bus Incidents

Incident Review Team investigations have proven that the major Root-Cause for bus incidents that occur while descending steep grades and exceeding the safe maximum speed limit predominantly relate to wrong gear selection. Meaning, the bus Operator was found to be descending a grade in too high a gear and / or the transmission control lever was found in the neutral position.

The major Causal-Factor in bus incidents proved to be the bus Operator being influenced by the passengers to travel at a speed up and above the Company procedural recommendation.

Consequence

The risk of experiencing an incident is raised considerably when: 1) the bus Operator ignores the Company’s speed limit and gear selection procedure recommendation and 2) the bus Operator is influenced by the passengers’ impatience and 3) the bus Operator travels down steep grades at a higher speed than what the Company has established. Once the bus Operator has to apply the service brake in order to decrease the speed of the bus when traveling downhill, the service brake shoe linings heat up very quickly. As the brake shoe linings continue to heat up (burning the brake shoe lining fiber material), the outer mating surface of the brake shoe lining glazes up. Once this phenomena has occurred (brake fade), the braking action between the brake shoe lining and the brake drum mating surface is no longer effective. Without brakes, the bus has no other means of slowing down, as the engine revolutions have increased and will not allow the bus Operator to select a lower gear in order to slow the bus down through the transmission. Unless the road being traveled levels out or the bus commences an ascent directly after the descent, the final outcome is the bus being involved in an incident that could be catastrophic (employee / multiple employee fatalities).



Attachment 2 – Pre-Operation Inspection Check List - Example

PT FMI DAILY PRE-TRIP EQUIPMENT INSPECTION REPORT AUTOMOTIVE (TIRE) EQUIPMENT			
PASSENGER BUS TRANSPORTATION			
EQUIPMENT NO. _____		LOCATION _____	DATE _____ / _____ / _____ day month year
DRIVER / OPERATOR NAME _____		PAYROLL _____	

ITEM	DRIVER / OPERATOR - RESPONSIBILITY INSPECT DAILY BEFORE START OPERATING EQUIPMENT	FINDINGS		REMARKS
		GOOD →	BROKEN ←	
STANDARD SAFETY DEVICES				
1	SAFETY BELT / SEAT - DRIVER/OPERATOR	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
2	VIEW MIRRORS (SIDES & REAR)	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
3	SIGNAL LIGHTS	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
4	BRAKE LIGHT	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
5	HEAD & TAIL LIGHTS	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
6	BACK UP ALARM	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
7	HORN	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
8	WINDSHIELD WIPER & CLEAR WINDSHIELD GLASS(No Obstructions)	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
9	SERVICE / PARKING BRAKE	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
10	ODOMETER (KM READING)	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
11	DOOR LOCKS	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
12	ROTARY LIGHTS - TRACTOR CABIN & PASSENGER BODY	<input type="checkbox"/>	<input type="checkbox"/>	DO NOT OPERATE UNTIL REPAIRED & CERTIFIED BY A MECHANIC
LIMITED USE				
1	FIRE EXTINGUISHER (FE) - WELDING - FUEL - OIL TRUCKS	<input type="checkbox"/>	<input type="checkbox"/>	NOT ALLOWED IN HAZARDOUS AREA. "FE" MUST BE CHARGED, NOTIFY EOD
2	FIRST AID KIT (P3K)	<input type="checkbox"/>	<input type="checkbox"/>	ALLOWED TO WORK. MUST GET RE-FILL OR NEW KIT FROM EOD
3	ROTARY LIGHT - HEAVY VEHICLE ONLY (PERMIT REQUIRED)	<input type="checkbox"/>	<input type="checkbox"/>	LIMITED TO FMI FIELD ROADS. NOTIFY EOD
4	EXPIRED DOCUMENT BOOKS - STNK / KEUR (Police Booklet)	<input type="checkbox"/>	<input type="checkbox"/>	DEADLINE, IF DOCUMENTS LOST, IF DOCUMENTS AVAILABLE & IN PROCESS, LIMITED TO C/P/R ROADS
5	TRIANGLE, RED CONES, RED FLAGS	<input type="checkbox"/>	<input type="checkbox"/>	LIMITED TO FMI FIELD ROADS. NOTIFY EOD, IMMEDIATELY
6	EXPIRED FMI PERMIT / SID / GOVT. LICENSE	<input type="checkbox"/>	<input type="checkbox"/>	DONOT OPERATE, UNTILL PERMIT / SID IS RENEVED OR OBTAINED TRAINING SLIP
7	AIR-CONDITIONING UNIT	<input type="checkbox"/>	<input type="checkbox"/>	ALLOWED TO OPERATE - NOTIFY EOD - SCHEDULE REPAIR
8	CABIN CONDITION (FUMES, WATER LEAKS, CORROSION)	<input type="checkbox"/>	<input type="checkbox"/>	LIMITED TO SHORT DISTANCE ONLY, NOTIFY EOD
MECHANICAL / NEED ASSISTANCE				
1	CHECKED ENGINE OIL <input type="checkbox"/> TRANSMISSION OIL <input type="checkbox"/> HYDRAULIC OIL <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
2	CHECK RADIATOR WATER <input type="checkbox"/> BATTERY SECURE / WATER LEVEL <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
3	CHECK DRIVE BELT <input type="checkbox"/> BRAKE FLUID <input type="checkbox"/> FUEL LEVEL <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
4	CHECK STEERING & PLAY <input type="checkbox"/> SERVICE BRAKE <input type="checkbox"/> CLUTCH <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
5	CHECK TIRES <input type="checkbox"/> WHEEL NUTS <input type="checkbox"/> SPRINGS <input type="checkbox"/> AIR SYSTEM <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
6	CHECK BODY <input type="checkbox"/> DUMP <input type="checkbox"/> ENGINE HOOD <input type="checkbox"/> CHASSIS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STANDBY UNTIL CERTIFIED BY A MECHANIC
NOTE: IF ANY ABOVE ITEM OR OTHER COMPONENT NOT FUNCTIONING, INFORM MECHANIC RIGHT AWAY & NOTIFY EOD - ALL RUBBER TIRED EQUIPMENT MUST BE FITTED WITH OFF-ROAD TIRES (NOT HIGHWAY TIRES). NO RE-TREADED OR VULCANIZED TIRES CAN BE USED OR FITTED TO THE FRONT OR REAR AXLES.				
OTHER UNSAFE FINDINGS : _____				
SIGNATURES:				
DRIVER/OPERATOR _____		IMMEDIATE SUPERVISOR _____		MECHANIC _____
ACKNOWLEDGED / RECEIVED BY EQUIPMENT OPERATIONS DEPARTMENT (E.O.D) _____		DATE _____		
<small>White - Equip. Oprt. Yellow - Driver Review</small>				
FORWARD DAILY TO EQUIPMENT OPERATIONS DEPARTMENT E.O.D : EQUIPMENT OPERATIONS DEPARTMENT				



Attachment 3 – Brake Test Procedure

PURPOSE:

The purpose of this section is to establish a method for Operators of buses with automatic transmissions to test the braking system during the pre-operational walk around inspection on a daily basis.

FREQUENCY AND LOCATION OF TESTING:

The bus Operator shall perform these tests at the start of his work shift. It normally will be performed during the pre-operational inspection. However, since the Service Brake Test and Parking Brake Test will need to be performed on level ground (not on an inclined road way), the Operator will perform these tests at the earliest possible opportunity following the pre-operational inspection. In any event, the Operator will not proceed down any major inclined roadway before performing the pre-operational test.

AIR SYSTEM CHECK:

- A. As part of the Operator pre-operational inspection, and before starting the bus, the Operator will drain both air reservoirs completely. This will allow the Operator to check the low air warning system as well as completely draining the tanks of water accumulated.
- B. After draining the air and water as described above, close the drain cocks.
- C. Start the bus engine and at idle (600 RPM), let the air pressure build. After starting the engine, the low air pressure warning system should activate due to no air pressure at start-up. If the low air pressure warning system does not work, do not operate the equipment. Report the problem to your supervisor and/or the maintenance supervisor for repairs.

Monitor the pressure gauge as the reservoir air pressure is building. Warning devices should cease when air pressure reaches 60-psi. Continue monitoring the pressure build up. As the pressure gauge passes the 85-psi mark, bring the engine to a high idle (1200-RPM) and start timing. The reservoir air pressure should build to 100 psi in less than 30 seconds. This indicates that adequate air pressure can be maintained even during adverse conditions and/or repeated brake applications. If the air pressure does not build up to 100-psi in the 30-second interval, stop the procedure and do not operate equipment. Report the problem to your supervisor and/or the maintenance supervisor for repairs.

- D. Continue building air pressure until the governor “unloads” the compressor. Maximum air pressure should be around 110-120 psi.



SERVICE AND PARK BRAKE TESTs:

Inspection processes shall be established to ensure service and park brakes are inspected according to OEM requirements for each make of bus used. The pre-operational checks required for service and park brakes vary by manufacturer. A checklist specific to each make and model of bus will be developed to ensure the braking systems are inspected prior to use in a manner consistent with the manufacturer's recommendations.

2012 Rev 1	Initial Release	
2012 Rev 2		
2013 Rev 3	Section 6: Requirements for drivers	1. Changed Medical exam from annual to biennial