

| Amendment No. city, state            | Amendment approved date | Original approved net PFC revenue | Amended approved net PFC revenue | Original estimated charge exp. date | Amended estimated charge exp. date. |
|--------------------------------------|-------------------------|-----------------------------------|----------------------------------|-------------------------------------|-------------------------------------|
| *03-03-C-01-SDF Louisville, KY ..... | 12/14/05                | 5,666,800                         | 5,666,800                        | 06/01/18                            | 09/01/13                            |

NOTE: The amendment denoted by an asterisk (\*) includes a change to the PFC level charged from \$3.00 per enplaned passenger to \$4.50 per enplaned passenger. For Louisville, KY, this change is effective on March 1, 2006.

Issued in Washington, DC, on February 8, 2006.

**Joe Hebert,**

Manager, Financial Analysis and Passenger Facility Charge Branch.

[FR Doc. 06-1314 Filed 2-10-06; 8:45 am]

BILLING CODE 4910-13-M

## DEPARTMENT OF TRANSPORTATION

### Maritime Administration

[Docket No. MARAD-2006-23894]

#### Information Collection Available for Public Comments and Recommendations

**ACTION:** Notice and request for comments.

**SUMMARY:** In accordance with the Paperwork Reduction Act of 1995, this notice announces the Maritime Administration's (MARAD's) intention to request extension of approval for three years of a currently approved information collection.

**DATES:** Comments should be submitted on or before April 14, 2006.

**FOR FURTHER INFORMATION CONTACT:**

Taylor E. Jones II, Maritime Administration (MAR-630), 400 Seventh St., SW., Washington, DC 20590. Telephone: 202-366-2323; Fax: 202-493-2180, or e-mail: [taylor.jones@dot.gov](mailto:taylor.jones@dot.gov). Copies of this collection also can be obtained from that office.

**SUPPLEMENTARY INFORMATION:**

*Title of Collection:* Voluntary Intermodal Sealift Agreement (VISA).  
*Type of Request:* Extension of currently approved information collection.

*OMB Control Number:* 2133-0532.

*Form Numbers:* MA-1020.

*Expiration Date of Approval:* Three years after date of approval by the Office of Management and Budget.

*Summary of Collection of Information.* This information collection is in accordance with Section 708, Defense Production Act, 1950, as amended, under which participants agree to provide commercial sealift capacity and intermodal shipping services and systems necessary to meet national defense requirements. In order to meet national defense requirements,

the government must assure the continued availability of commercial sealift resources.

*Need and Use of the Information:* The information collection is needed by MARAD and the Department of Defense (DOD), including representatives from the U.S. Transportation Command and its components, to evaluate and assess the applicants' eligibility for participation in the VISA program. The information will be used by MARAD and the U.S. Transportation Command, and its components, to assure the continued availability of commercial sealift resources to meet the DOD's military requirements.

*Description of Respondents:*

Operators of qualified dry cargo vessels.

*Annual Responses:* 40.

*Annual Burden:* 200 hours.

*Comments:* Comments should refer to the docket number that appears at the top of this document. Written comments may be submitted to the Docket Clerk, U.S. DOT Dockets, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590. Comments may also be submitted by electronic means via the Internet at <http://dmses.dot.gov/submit>. Specifically address whether this information collection is necessary for proper performance of the functions of the agency and will have practical utility, accuracy of the burden estimates, ways to minimize this burden, and ways to enhance the quality, utility, and clarity of the information to be collected. All comments received will be available for examination at the above address between 10 a.m. and 5 p.m. EDT (or EST), Monday through Friday, except Federal holidays. An electronic version of this document is available on the World Wide Web at <http://dms.dot.gov>.

(Authority: 49 CFR 1.66)

By order of the Maritime Administrator.

Dated: February 8, 2006.

**Joel C. Richard,**

Secretary, Maritime Administration.

[FR Doc. E6-2004 Filed 2-10-06; 8:45 am]

BILLING CODE 4910-81-P

## DEPARTMENT OF TRANSPORTATION

### National Highway Traffic Safety Administration

[Docket No. NHTSA-2004-18640, Notice 2]

#### InterModal Technologies, Inc.; Denial of Petition for a Temporary Exemption From Federal Motor Vehicle Safety Standard No. 121

**SUMMARY:** This notice denies a petition from InterModal Technologies, Inc., for a temporary exemption from certain requirements of Federal Motor Vehicle Safety Standard No. 121, *Air brake systems*. The denial is based on the petitioner's failure to persuade the agency that the safety device in question provides a safety level at least equal to that of the applicable Federal standard. Further, it failed to articulate how the exemption would make easier the development or field evaluation of the safety device for which the exemption is being sought.

The National Highway Traffic Safety Administration (NHTSA) published a notice of receipt of the application on July 19, 2004, and afforded an opportunity for comment.<sup>1</sup>

**FOR FURTHER INFORMATION CONTACT:**

George Feygin in the Office of Chief Counsel, NCC-112, National Highway Traffic Safety Administration, 400 Seventh St., SW., Washington, DC 20590 (Phone: 202-366-2992; Fax 202-366-3820; E-Mail: [George.Feygin@nhtsa.dot.gov](mailto:George.Feygin@nhtsa.dot.gov)).

#### I. Background and Summary of the Petition

InterModal Technologies, Inc. ("InterModal") is a manufacturer of semi-trailers and is incorporated in the State of Colorado. InterModal would like to manufacture semi-trailers equipped with a device, which it refers to as "MSQR-5000 pneumatic antilock braking system" ("MSQR-5000").<sup>2</sup> The MSQR-5000 does not incorporate electrical circuits to transmit or receive electrical signals.<sup>3</sup>

<sup>1</sup> See 69 FR 43052.

<sup>2</sup> For additional information on this petition, please see Docket No. NHTSA-2004-18640 at <http://dms.dot.gov/search/search/FormSimple.cfm>.

<sup>3</sup> We note that the President of InterModal Technologies, William Washington, is also the President of ABS, Inc., manufacturer of the MSQR-

In its petition, InterModal contends that the MSQR-5000 device operates as an Antilock Braking System (ABS). InterModal acknowledged that a trailer equipped with the MSQR-5000 does not comply with the malfunction indicator (warning light) requirements of S5.2.3.2 and S5.2.3.3 in Federal Motor Vehicle Safety Standard ("FMVSS") No. 121, *Air brake systems*.<sup>4</sup>

FMVSS No. 121 establishes requirements for braking systems on vehicles equipped with air brake systems. In order to address the safety consequences of braking-related instability, FMVSS No. 121 requires ABS.<sup>5</sup> FMVSS No. 121 also includes warning light requirements established to inform operators of an ABS malfunction and both to facilitate and to encourage repairs of faulty ABS systems.

S5.2.3.2 *Antilock Malfunction Signal* requires that:

" \* \* \* each trailer \* \* \* manufactured on or after March 1, 2001, that is equipped with an antilock brake system shall be equipped with an electrical circuit that is capable of signaling a malfunction in the trailer's antilock brake system, and shall have the means for connection of this antilock brake system malfunction signal circuit to the towing vehicle \* \* \* Each message about the existence of such a malfunction shall be stored in the antilock brake system whenever power is no longer supplied to the system, and the malfunction signal shall be automatically reactivated whenever power is again supplied to the trailer's antilock brake system. In addition, each trailer manufactured on or after March 1, 2001, that is designed to tow other air-brake equipped trailers shall be capable of transmitting a malfunction signal from the antilock brake systems of additional trailers it tows to the vehicle towing it."

S5.2.3.3 *Antilock Malfunction Indicator* requires that:

"In addition to the requirements of S5.2.3.2, each trailer \* \* \* manufactured on or after March 1, 1998, and before March 1, 2009, shall be equipped with an external antilock malfunction indicator lamp \* \* \*"

The trailers in question are incapable of meeting these requirements. Trailers equipped with only the MSQR-5000

would not be equipped with an electrical circuit capable of signaling a malfunction in the ABS or storing any information that indicated a malfunction had occurred. Further, these trailers would not be equipped with an external antilock malfunction indicator lamp.

Because the trailers equipped with MSQR-5000 do not comply with the requirements of S5.2.3.2 and S5.2.3.3 of FMVSS No. 121, pursuant to the procedures of 49 CFR 555.6(b), InterModal petitioned NHTSA for a Temporary Exemption from these requirements. The stated basis for the petition was that an exemption would facilitate the development or field evaluation of the MSQR-5000, which petitioner contends offers a safety level at least equal to that of systems that comply with FMVSS No. 121. The petitioner argued that without an exemption, it is unable to sell a vehicle whose overall level of safety is at least equal to that of vehicles that meet the requirements of the standard.

InterModal did not elaborate on how an exemption from the requirements of S5.2.3.2 and S5.2.3.3 would facilitate development or field evaluation of a new motor vehicle safety feature. The petitioner indicated that MSQR-5000 has already been developed by Air Brake Systems, Inc.<sup>6</sup> Accordingly, development of a new motor vehicle safety feature was not at issue because InterModal seeks an exemption for a product that has already been developed. InterModal stated that more than 7,000 MSQR-5000 units are already in operation.

InterModal offered several reasons why it believes the overall level of safety of semi-trailers equipped with MSQR-5000 is at least equal to that of non-exempted semi-trailers.

First, InterModal argued that based on laboratory test data and field-test data, MSQR-5000 operates as a conventional ABS. Further, InterModal stated that MSQR-5000 met or exceeded all the performance requirements in FMVSS No. 121.<sup>7</sup> Petitioner also cited several

affidavits in support of its contention that trailers equipped with MSQR-5000 are at least as safe as trailers equipped with conventional ABS.<sup>8</sup>

Second, InterModal argued that MSQR-5000 is a "fully closed-loop" system, as opposed to a conventional electronic ABS that utilizes modulators to vent air during the braking cycle. According to petitioner, an electronic ABS is subject to contamination and wear due to venting. Further, in its view, venting may extend the stopping distance. In contrast, the MSQR-5000 modulates air internally and does not vent during braking.

In regard to the electronic malfunction indicator requirement, InterModal stated that tractor-trailer combinations resulting from use of its trailers with a standard tractor would already be equipped with a pneumatic "low pressure" malfunction indicator located in the cabin. Petitioner asserts that this design alerts the driver if the system malfunctions. Further, in the event of a severe air pressure loss, an emergency brake chamber releases to engage the emergency brake, stopping the vehicle until repairs can be made.

Finally, the petitioner presented several arguments of why it believes a semi-trailer equipped with a MSQR-5000 device is superior to a semi-trailer equipped with a conventional ABS system that complies with the requirements of FMVSS No. 121. Specifically, petitioner argues that MSQR-5000: (1) Is less expensive; (2) is less expensive to install; (3) is easier to operate; (4) has a better safety record than ABS products that comply with the requirements of FMVSS No. 121;<sup>9</sup> (5) causes less wear on brake linings; (6) has fewer parts that are susceptible to damage or wear.

Other than what may be implied from the foregoing, the petitioner did not specifically set forth the reasons why granting this exemption would be in the public interest, as required by 49 CFR 555.5(b) (7).

For additional information on InterModal, please go to: <http://www.intermodaltechnologies.com>.

foot radius curve and maintaining itself within in a 12-foot wide lane. When using full treadle brake application per FMVSS 121, the vehicle did not stay in the 12-foot lane. This occurred for the vehicle with and without the MSQR-5000 brake valve at both vehicle weights." <http://www.absbrakes.com/ABS%20Final%20Report-Revision%20A.pdf> at Executive Summary and page 9.

<sup>8</sup> For laboratory test data, field-test data, and affidavits, see Docket No. NHTSA-2004-18640.

<sup>9</sup> In support of this statement, petitioner indicates that in September 2000, 300,000 electronic ABS units were subject to a voluntary recall because of delays in brake application.

5000. ABS, Inc. claims on its website that the MSQR-5000 is "exempt" from warning light requirements incorporated into FMVSS No. 121, <http://www.absbrakes.com/exemption.htm>. Nevertheless, InterModal now seeks an exemption from the same warning light requirement. For more information on MSQR-5000, see <http://www.absbrakes.com/>.

<sup>4</sup> The supporting information attached to the petition contained several affidavits arguing that MSQR-5000 meets other requirements of FMVSS No. 121 and performs better than conventional ABS systems; a copy of the patent application; and two test reports.

<sup>5</sup> The issue of whether MSQR-5000 is an ABS is addressed later in this document.

<sup>6</sup> We note that Air Brake Systems, Inc., advertises the MSQR-5000 as complying with "IN-CAB warning light regulation 49 CFR 571.121" see <http://www.absbrakes.com/home.htm>. That statement is misleading because FMVSS No. 121 applies to vehicles and not items of equipment. An item of equipment such as the MSQR-5000 cannot "comply" with FMVSS No. 121.

<sup>7</sup> We note that Air Brake Systems, Inc. apparently sponsored testing of an MSQR-5000 equipped tractor-trailer combination by the Southwest Research Institute in 2002. The test report for this testing, which was submitted with the petition, and available on the Air Brake Systems, Inc. Web site, states in pertinent part: "For the wetted curve test, the vehicle is required by FMVSS 121 to stop from 30 mph on a wetted surface while negotiating a 500-

## II. Comments on the Petition

We published a notice of receipt of the application in accordance with the requirements of 49 U.S.C. 30113(b)(2). The notice made no judgment on the merits of the application. In response, we received five comments, three supporting granting the petition and two supporting denial.

Andrew W. Mouk stated that he "handled the products liability coverage for the MSQR-5000 for many years and ha[s] never had a liability claim arise out of the use of this product." He added that some insurance companies have even offered a discount in rates to truckers who install this device on their heavy trucks, and that drivers have been impressed with the increased braking capabilities after the installation of MSQR-5000. He argued that the trucking industry would be a safer industry "if this valve was in more widespread use."<sup>10</sup> No data to support Mr. Mouk's comments was included.

An anonymous commenter stated that s/he "witnessed testing of the MSQR-5000 valve at Bandimere Speedway in Colorado and observed firsthand a 40% reduction in stopping distance and almost 50% reduction in braking time using this system." The commenter also asserted that s/he knows of drivers who report dramatically improved safety and reduced maintenance costs. The commenter also asserted knowledge of "many reports of accidents avoided and lives saved due to the shorter stopping distance and braking reliability."<sup>11</sup> The commenter argued that the Antilock Malfunction Indicator required by S5.2.3.3 of FMVSS No. 121 is inconsequential to safety. As with the previous comment, this commenter did not provide any supporting data.

Tracy White of Farm Master, Inc., stated that the company uses and likes MSQR-5000 because the system is easy to install and maintain. The comment also indicated that Farm Master's customers preferred the system because of its reliability and that Farm Master has not received any complaints.<sup>12</sup>

Robert J. Crail opposed granting the petition. He stated that a failure of the "diaphragm" in the MSQR-5000 would render inoperable the "alleged antilock feature." Mr. Crail also stated that air brake systems equipped with the MSQR-5000 valve have no means of automatically controlling the degree of rotational wheel slip during braking and no means of sensing the rate of angular rotation of the wheels. Further, he stated that the MSQR-5000 valve has no

means of relieving excess pressure from the brake chambers, which means a locked wheel would remain locked until the driver reduced the braking pressure, which Mr. Crail stated is not antilock braking. Mr. Crail concluded by arguing that trailers containing the MSQR-5000 would "certainly degrade highway safety."

Advocates for Highway and Auto Safety (Advocates) argued that NHTSA should reject the requested exemption because the petition filed by InterModal has substantive and procedural defects. Specifically, Advocates stated that InterModal acknowledged the manufacture and sale of trailers equipped with seemingly noncompliant braking systems, and argued that granting an *ex post facto* exemption would be inappropriate. Advocates also stated that InterModal made no arguments explaining why a grant of the petition would be in the public interest.

Advocates argued that MSQR-5000 does not notify vehicle operators of ABS malfunction with otherwise operable brakes. In the case of ABS systems complying with FMVSS No. 121, a malfunction notification alerts an operator who can drive the vehicle to a safe location, including repair facilities, in order to accomplish restoration of full ABS operation. By contrast, Advocates states that MSQR-5000 overrides operator control of the vehicle and brings it to an immediate stop in what could be dangerous operating circumstances. Finally, Advocates argued that InterModal provided no reliable safety data on the consequences of emergency brake application if ABS malfunctions occur.

## III. The Agency Decision

After careful consideration of the petition, NHTSA is denying the InterModal petition for a temporary exemption because the petitioner failed to meet the criteria specified in 49 CFR 555.6(b). Specifically, InterModal did not persuade the agency that MSQR-5000 provides a safety level at least equal to that of the applicable Federal safety standard. InterModal also failed to articulate how granting the exemption would be in the public interest or how the exemption would facilitate development or field evaluation of the MSQR-5000.

### Background

When heavy vehicle brakes are applied with increasing amounts of force, braking generally improves. However, at some point, the forces in the brakes exceed the grip of the tire on the road. The tire then begins to slide and the wheel rapidly goes into full

lockup. A sliding tire loses its grip in all directions. Thus, locked wheels make a vehicle unstable and lead to loss of control.

FMVSS No. 121 requires antilock braking systems (ABS) on vehicles equipped with air brakes. The ABS controls the degree of rotational wheel slip in order to minimize wheel lockup, maximize braking force and preserve directional control. In doing so, the ABS reduces, holds and reapplies, *i.e.*, modulates, brake pressure to each controlled wheel. More specifically, the ABS automatically reduces the amount of brake application pressure by venting air in the brake chambers into the atmosphere. The brake pressure must then be increased again to ensure that there is sufficient brake force. Through these cycles, which require reducing or applying air pressure by as much as 60 pounds per square inch, the degree of wheel slip is controlled.

The ABS system must have the ability to determine if and when a braked wheel becomes locked due to changes in traction conditions. To accomplish this, any ABS must be a "closed loop" system; *i.e.*, a system that continuously monitors the rate of wheel rotation, adjusts wheel rotation when needed, and reacts to ongoing changes in rotation caused by the operation of the system, by changed road surfaces, or both.<sup>13</sup> For example, a braking vehicle may move from a high friction surface, like dry pavement, to a very low friction surface such as an icy road. In such an instance, an ABS must sense the different frictional properties of the road surface through changes in the rate of wheel rotation and reduce brake air line pressure on the low friction surface, and then restore it when a high friction surface is reached.

### Definition of ABS

The definition of ABS included in FMVSS No. 121 incorporates the terms set forth in Society of Automotive Engineers (SAE) publications and European regulations to reflect the attributes of antilock systems as commonly understood by the automotive industry.<sup>14</sup>

<sup>13</sup> See 60 FR 13217. We note that in the petition, InterModal argues that MSQR-5000 is closed loop because it is incapable of venting air during the braking cycle. As explained below, this argument is erroneous because MSQR-5000 is incapable of continuously monitoring the rate of wheel rotation and therefore is not closed loop.

<sup>14</sup> See Sec. 7.3, 7.4.4, 7.4.5 of "Antilock Brake System Review" SAE J2246 (June 1992). "ABS is a feedback control system that attempts to maintain controlled braking under all operating conditions. This is accomplished by controlling the slip at each wheel so as to obtain optimum forces within the limits of the tire-road combination."

<sup>10</sup> See Docket No. NHTSA-2004-18640-3.

<sup>11</sup> See Docket No. NHTSA-2004-18640-6.

<sup>12</sup> See Docket No. NHTSA-2004-18640-7.

An antilock brake system is defined in S4 of FMVSS No. 121 as follows:

*Antilock brake system* or ABS means a portion of a service brake system that automatically controls the degree of rotational wheel slip during braking by:

(1) Sensing the rate of angular rotation of the wheels;

(2) Transmitting signals regarding the rate of wheel angular rotation to one or more controlling devices which interpret those signals and generate responsive controlling output signals; and

(3) Transmitting those controlling signals to one or more modulators which adjust brake actuating forces in response to those signals. [*emphasis added*]

We interpret this definition as follows:

“Automatically controls” means that the ABS, rather than the driver, regulates the degree of rotational wheel slip during braking. Automatic control is necessary since drivers frequently cannot control lockup in emergency situations or on slippery surfaces.

“Wheel slip” refers to the proportional amount of wheel/tire skidding relative to the forward motion (velocity) of the vehicle. As defined in S4 of FMVSS No. 121, wheel lockup means 100 percent wheel slip.

“During braking” means during all phases of braking when antilock braking would be called upon, including incipient wheel lock and subsequent wheel lockup. In order to meet this portion of the definition, an ABS must therefore act when wheels are about to lock, when they have locked and after they have locked.

In short, the introductory clause of the definition of ABS in FMVSS No. 121 means that during braking an ABS system must act without any action on the part of the driver. When functioning on its own, the system must exercise control over the degree of rotational wheel slip, including full lockup. Finally, a qualifying system must act at all times during braking, including those periods where lock up is about to occur, and where full lockup has occurred. The definition also sets forth the means by which these conditions are to be met.

“Sensing the rate of angular rotation of the wheels” means that the ABS must be able to sense the rate of angular wheel rotation, not simply whether the wheel is rotating or not. The information about the rate of wheel rotation, relative to the forward motion of the vehicle, enables an ABS to determine if a wheel is about to lockup or has locked up. It also enables the ABS to then control (release/hold/

reapply) brake pressure to enable the wheel to begin rotating again, at an appropriate level of rotational wheel slip.

“Transmitting signals regarding the rate of wheel angular rotation to one or more controlling devices which interpret those signals and generate responsive controlling output signals” means that ABS must use the rate of wheel rotation and not a substitute or surrogate factor to control wheel slip and prevent lockup.

“Transmitting those controlling signals to one or more modulators which adjust brake actuating forces in response to those signals” means that the ABS must modulate brake pressure in response to the rate of angular rotation of the wheels relative to the vehicle’s forward motion. During automatic brake control, wheel speed has to be constantly monitored so that the maximum braking force for the conditions can be achieved by a succession of pressure reduction, pressure-holding and pressure-reapplication.

Meeting all of the elements of this definition is necessary to ensure that an ABS system provides the minimum level of performance necessary for safe braking. Thus, an antilock system must be capable of reducing, holding and reapplying brake pressure to each controlled wheel. The wheel speed sensor must monitor the rotational speed of the wheel. When a monitored wheel approaches a lockup condition, there is a sharp deceleration of the wheel and rise in wheel slip. If this exceeds threshold levels, the control unit must send a signal to the modulator device to hold or reduce the build-up of wheel brake pressure until the danger of wheel lockup has passed. The brake pressure must then be increased again to ensure that the wheel is not underbraked for the road surface conditions.

#### *Warning Light*

An ABS malfunction warning light is required by Sections 5.1.6.2 and 5.1.6.3 of Standard 121. The warning light requirements are important for reducing crashes, deaths and injuries. These warning light requirements are necessary to ensure that operators are informed of an ABS malfunction, including those that have previously occurred in a trailer, and both facilitate and encourage repairs of faulty ABS systems.<sup>15</sup>

<sup>15</sup> See 60 FR 13244.

#### *Analysis*

One threshold question that must be examined is whether the petitioner’s vehicles are equipped with an ABS system that functions as an ABS within the meaning of FMVSS No. 121. This is relevant to InterModal’s petition because paragraph S5.2.3.1 of FMVSS No. 121 of FMVSS No. 121 requires trailers to be equipped with ABS, as defined in the Standard. If the MSQR–5000 is not an ABS, within the meaning of FMVSS No. 121, an exemption from the warning light requirements of the Standard, as requested by InterModal, would still not permit the petitioner to use the MSQR–5000 in lieu of an ABS system either complying with Standard 121 or, if InterModal had requested an exemption from the ABS requirement, providing an equivalent level of performance to vehicles meeting that requirement.

Many of the arguments raised by the petitioner as to whether MSQR–5000 meets the Federal requirements applicable to anti-lock braking systems have previously been examined by NHTSA in a June 4, 2001 interpretation letter to MAC Trailer and the subsequent litigation arising out of issuance of that letter.<sup>16</sup> (*Air Brake Systems, Inc. v. Mineta*, 357 F.3d 632 (6th Cir. 2004); *Air Brake Systems, Inc. v. Mineta*, 202 F.Supp.2d 705 (E.D.Mich. 2002)).

#### *Why MSQR–5000 Does Not Meet the Definition of ABS*

InterModal submitted a series of affidavits stating that MSQR–5000 is an ABS system within the meaning of S4 of FMVSS No. 121. As explained below, we disagree and note that the supporting affidavits, as well as the arguments contained in the petition do not address the entire definition as set forth in S4 of FMVSS No. 121.

The MSQR–5000 is essentially a diaphragm, backed by a piston and dampened by a rubber spring, which is acted on by the air pressure in the brake lines to the brake cylinders.<sup>17</sup> According to the materials submitted by the petitioner, the MSQR–5000 operates on the theory that wheel lockup occurs because of pressure spikes and pressure differentials inside the braking system. The MSQR–5000 purportedly prevents wheel lockup by reacting to, and

<sup>16</sup> During the course of the litigation both ABS, Inc. and NHTSA submitted affidavits and declarations to the District Court. Many of these affidavits and declarations were submitted by InterModal in support of its petition. The agency has placed these in the docket along with declarations and affidavits submitted to the District Court by NHTSA.

<sup>17</sup> See patent # 5,078,455.

negating the impact of, these pressure waves and pressure differentials.

InterModal also provided the agency with several affidavits from private individuals purporting to state that a vehicle equipped with MSQR-5000 would conform to the requirements of FMVSS No. 121, and that based on mathematical calculations, vehicles equipped with MSQR-5000 would exhibit shorter stopping distances compared to conventional ABS systems that comply with the requirements of FMVSS No. 121.<sup>18</sup> Because these affidavits did not explain how the MSQR-5000 compensates for its apparent inability to detect and combat wheel slip, we find the affidavits irrelevant to vehicle performance on road conditions where ABS is needed. Similarly, comments submitted in support of the petition stating that use of the MSQR-5000 shortened stopping distance, had not generated any product liability claims, or was cheap and simple to maintain, are irrelevant to whether it functions as an ABS. Stopping performance alone is no indicator that a vehicle has ABS. While the petitioner provided some data, these data did not demonstrate performance which meets or exceeds the requirements of FMVSS No. 121, as required by § 555.6(b)(2)(ii). In fact, one item provided by InterModal, a Final Report on testing conducted by Southwest Research Institute (SWRI), indicates that the MSQR-5000 allowed wheel lockup resulting in a tractor-trailer combination experiencing the equivalent of an FMVSS No. 121 test failure. Specifically, the vehicle did not, under a full-treadle brake application, stop within a 12-foot wide lane from 30 mph on wet surface while negotiating a 500-foot radius curve.<sup>19</sup> The conclusion of the Final Report reads as follows: "Based on the test results and discussions with the manufacturer, SwRI found that the MSQR-5000 system does not function in the same manner as an electronic anti-lock brake system (ABS). With full treadle application, it is possible to cause wheel

<sup>18</sup> In addition to the affidavit, petitioner also provided the agency with a copy of the patent application which described the operation of MSQR-5000. Further, a one-page summary of a test " \* \* \* conducted to approximate the requirements of the 1 March 1997 revision of FMVSS 121 anti-lock brake system regulation" by Perazzola, Inc., purported to show that vehicles equipped with MSQR-5000 exhibited superior stopping performance.

<sup>19</sup> See the Executive Summary and page 9 of the SWRI Final Report at Docket No. NHTSA-2004-18640.

lockup that results in the vehicle not staying within the 12-foot lane."<sup>20</sup>

The agency has considerable experience examining devices such as the MSQR-5000 and claims that this device and similar pressure dampening mechanisms function as an ABS. In 1992, NHTSA received a petition to require installation of devices like the MSQR-5000 on air-braked vehicles. In response, the agency reviewed tests performed by the Southwest Research Institute, and the U.S. Army's Aberdeen Proving Ground, which showed that the MSQR-5000, and a similar device called the BX-100, did not prevent wheel lockup. NHTSA also tested a similar device for hydraulic brake systems, called the Brake Guard, which showed that the Brake Guard did not, as claimed, prevent wheel lockup.<sup>21</sup> The agency denied the petition on July 2, 1992 explaining:

" \* \* \* Independent tests of the petitioner's device or products similar to his device indicate that it would not be in the interest of safety to adopt his requested amendment. For instance, tests at the Aberdeen Proving Ground indicated that a similar product, the BX-100 brake equalizer, was not approved for use on military vehicles \* \* \* Similarly, tests at Southwest Research Institute indicated that vehicles equipped with the petitioner's device needed an average of approximately 0.5 seconds longer to stop because additional time was needed to fill the expansion chamber. These vehicles exhibited a slower stopping time which ranged from 0.4 to 1.0 seconds at 40 miles per hour which would add from 24 to 59 feet to the stopping distance \* \* \* Tests also indicate that the petitioner's device does not smooth out pressure spikes as claimed. In fact, it typically would only cause small changes in the pressure curves because of the added volume in the brake system that must be filled with air \* \* \* Historically, measurements at VRTC concerning pressure in air brake systems have not revealed peaks in brake pressure. In contrast, to the agency's knowledge, axle-to-axle pressure differentials in combination units are the only type of air pressure differential that contributes to safety problems such as jackknifing and unbalanced braking."<sup>22</sup>

<sup>20</sup> The vehicle tested was a tractor-trailer combination. Standard No. 121 contains a requirement that non-articulated air braked vehicles; i.e., "straight trucks" stay within a 12 foot lane while braking on a wetted curve. This test requirement does not apply to articulated vehicle such as a tractor-trailer combination. However, the testing performed by Southwest is indicative of the inability of the MSQR-5000 to function as an ABS in a panic stop on a low friction surface. See *Id.* at 10.

<sup>21</sup> Based on NHTSA's testing, and other evidence, the Federal Trade Commission concluded that the Brake Guard was not an antilock brake system, and that there were "no competent and reliable scientific data" to support the manufacturer's claims to the contrary (See Docket No. NHTSA-2004-18640).

<sup>22</sup> See 57 FR 29459.

In regard to the theory of the MSQR-5000's operation, NHTSA also conducted two-year road tests of the antilock brake systems on 200 trucks, and 50 trailers, accumulating 44 million miles' worth of data,<sup>23</sup> which revealed no evidence of the pressure pulses that are the linchpin of the device's operation. In the course of the litigation in *Air Brake Systems, Inc. v. Mineta*, ABS Inc. offered no data purporting to demonstrate that these pressure pulses exist and InterModal's petition offers nothing further.

As in the current InterModal petition, in the case of *Air Brake Systems, Inc. v. Mineta*, ABS Inc. and its affiants asserted that the MSQR-5000 operates on the basis of differential pressure waves generated during braking by brake shoes contacting high and low spots and other irregularities in rotating brake drums. In response to these pressure differentials, the MSQR-5000 allegedly generates responsive waves that dampen pressure increases.<sup>24</sup> NHTSA research and testing have never revealed the existence of the pressure waves described by the petitioner and, after conferring with agency experts and outside consultants having as much as 45 years experience in the field of developing, designing, and testing brake systems, the agency believes that such waves do not exist.<sup>25</sup> However, even assuming that the pressure differentials posited by the petitioner in fact exist, the MSQR-5000 depends on wheel rotation to generate the pressure pulses to which it allegedly reacts. As a locked wheel does not rotate, the MSQR-5000 cannot sense wheel lockup when it occurs and would cease completely to function under the very conditions of maximum braking instability when it most needs to act.<sup>26</sup> Therefore, the agency concludes that MSQR-5000 does not "automatically control \* \* \* the degree of rotational wheel slip during braking" under all conditions, as FMVSS No. 121 requires.

In addition to the inability to control rotational wheel slip during braking, even if the claimed pressure pulses do exist, they are not signals from which "the rate of angular rotation of the wheels," or, therefore, wheel slip, can be determined, as FMVSS No. 121 requires. Because the MSQR-5000 has no way of knowing how many "irregularities" there are in the shape of

<sup>23</sup> See affidavits of Duane Perrin and Jeffrey Woods at Docket No. NHTSA-2004-18640.

<sup>24</sup> See affidavits by Cepican, Corn, Foss, and Perazzola at Docket No. NHTSA-2004-18640.

<sup>25</sup> See affidavits of Beier, Ervin, Perrin, and Buckman at *Id.*

<sup>26</sup> See affidavits of Beier, Perrin, and Milligan at *Id.*

any given brake drum, it cannot measure the angular velocity of a wheel based solely on the propagation of the assumed pressure pulses.<sup>27</sup> For example, the device has no means of distinguishing between the pulses generated by a brake drum with six irregularities turning at 10 miles per hour, and a drum with a single irregularity turning at 60 miles per hour.<sup>28</sup> Further, because it cannot determine the forward velocity of the vehicle, it would in any event lack critical information needed in order to determine wheel slip. The MSQR-5000 also lacks any means of processing information about the angular rotation of the wheels, and the forward velocity of the vehicle, in order to calculate the wheel slip. Finally, the theoretical claims of petitioner fail to account for the fact that the brake drums on new vehicles are round and have minimal irregularities, if any, from which any pressure pulses would spring.<sup>29</sup>

The petitioner argues that the MSQR-5000 controls wheel slip and prevents lockup by reducing pressure spikes that its expert assumes to be on the order of 2 psi.<sup>30</sup> However, during a sudden stop, a vehicle operator may apply as much as 60-100 psi of brake pressure, thus requiring that pressure be reduced by anywhere from 20 to 80 psi to prevent wheels from locking, or to free wheels that have already locked.<sup>31</sup> Under these conditions, modulating pressure pulses in the range of 2 psi will not prevent sustained wheel lockup.<sup>32</sup> The MSQR-5000 does not vent air from the brake chambers in order to reduce brake pressure, a process that is basic to controlling slip and preventing lockup in air-braked vehicles.<sup>33</sup> For this reason, NHTSA concludes that the MSQR-5000 does not "control wheel slip during braking" within the meaning of FMVSS No. 121.

The petitioner's analysis of fluid dynamics within an air brake system assumes a plane, one dimensional

system and fails to account for the reflection and diffraction of the assumed pressure waves within the multi-dimensional geometry of a real brake line system.<sup>34</sup> It also fails to account for the effects of the incoming "data" waves and outgoing "control" waves on one another as they travel in opposite directions within the same brake lines. Instead it assumes, that the pressure waves generated by the rotation of the brake drums travel in "still air" within the brake line.

#### *Malfunction Indicator*

The MSQR-5000 is not equipped with an electrical circuit capable of signaling an ABS malfunction or storing information that such a malfunction had occurred. Consequently, InterModal's trailers are not equipped with an external antilock malfunction indicator lamp. The agency believes that an antilock malfunction indicator is a critical safety feature necessary to alert vehicle operators that the ABS system is not functioning and wheel lockup could occur. While the petitioner and one commenter stated that a warning system isn't necessary because MSQR-5000 does not use electricity and a low air pressure warning device would suffice, it fails to explain the potential consequences of mechanical failures of the MSQR-5000 system.

We note that a low air pressure warning device can warn a driver of a significant loss in the brake system air pressure. However, Robert J. Crail and Advocates both noted that a low air pressure alarm would not warn a driver that MSQR-5000 is not operating. The MSQR-5000 can fail without significant loss in system air pressure. If this occurred, ABS systems meeting the requirements of FMVSS No. 121 would warn the vehicle operator in the absence of any pressure loss. Conversely, the MSQR-5000 would not.

NHTSA adopted the warning light requirement after concluding "that it is essential that a driver be notified about an ABS malfunction, so that the problem can be corrected." This conclusion applies equally to electronic and mechanical ABSs, and NHTSA explained that "mechanical ABSs will have to comply with the malfunction indicator requirements."<sup>35</sup> Any mechanical device, including the MSQR-5000, can wear out, break, or otherwise malfunction.<sup>36</sup> Indeed, we have previously concluded, and continue to believe, that the MSQR-5000 is susceptible to any number of

possible malfunctions that would not be detected by the vehicle's low-pressure warning system.<sup>37</sup>

#### *InterModal Did Not Articulate How a Temporary Exemption Would Facilitate the Development or Field Evaluation of Vehicles Equipped With MSQR-5000*

The petitioner did not articulate how a temporary exemption would facilitate the development or field evaluation of vehicles equipped with MSQR-5000, as required by § 555.6(b)(3). Specifically, the petitioner did not provide a research plan or any other information that would explain how an exemption would be helpful in further development of MSQR-5000 or trailers equipped with that device. For example, InterModal did not indicate that it intends to collect any data from vehicles equipped with MSQR-5000. We therefore concur in the comments offered by Advocates indicating that InterModal did not address how granting an exemption would serve the public interest.

In sum, the petitioner failed to meet the criteria of § 555.6(b)(3) and § 555.6(b)(2)(ii) because the petitioner did not persuade the agency that the safety device in question provides a safety level at least equal to that of the applicable Federal standard, and because it failed to articulate how the exemption would make easier the development or field evaluation of the safety device for which the exemption is being sought. In addition, because the agency believes that MSQR-5000 cannot sense the rate of angular wheel rotation on a vehicle with new brake drums that do not have wear-related irregularities; is incapable of quantifying the actual rate of angular wheel rotation or wheel slip; cannot control rotational wheel slip during full lockup; and cannot release excess pressure and therefore is incapable of preventing incipient lockup, we conclude that a grant of an exemption is not in the public interest.

In consideration of the foregoing, the agency is denying the InterModal petition for a temporary exemption from the requirements of Federal Motor Vehicle Safety Standard ("FMVSS") No. 121, *Air brake systems*.

(49 U.S.C. 30113; delegations of authority at 49 CFR 1.50. and 501.8)

Issued on: February 8, 2006.

**Jacqueline Glassman,**

*Deputy Administrator.*

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<sup>27</sup> See the affidavit of Duane Perrin at *Id.*

<sup>28</sup> See *id.* See also the affidavits of Milligan and Beier at Docket No. NHTSA-2004-18640.

<sup>29</sup> See affidavits of Ervin and Perrin at *Id.* Even a used drum seldom becomes "out of round" by more than thirty to sixty thousandths (0.030-0.060) of an inch, in one or two places. Petitioner did not address how far "out of round" a brake drum must be to send a detectable "signal" to the MSQR-5000. See affidavit of Beier at *Id.*

<sup>30</sup> See affidavit of John F. Foss (page 6) at *Id.*

<sup>31</sup> For example, in one test of the BX-100, which has a dampener essentially identical to the MSQR-5000, the required air brake pressure for meeting the test stopping criteria was 46 psi, whereas wheel lockup occurred at 15 psi, a difference of more than 30 psi.

<sup>32</sup> See affidavits of Ervin and Perrin at *Id.*

<sup>33</sup> See the affidavits of Duane Perrin and Leonard Buckman at *Id.*

<sup>34</sup> See affidavit of Milligan at *Id.*

<sup>35</sup> See 60 FR at 13220, 13244, 13246.

<sup>36</sup> See *Id.*

<sup>37</sup> See the affidavit of Beier at *Id.*, giving examples.