



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: PE 04-013
Prompted By: Two VOQS
Date Opened: 02/02/2004 Date Closed: 06/18/2004
Principal Investigator: Tom Bowman
Subject: Frame Cracking

Manufacturer: Forest River, Inc.
Products: 1998-1999 Forest River Fifth Wheel Trailers
Population: 1000 (estimated)

Problem Description: Cracks may develop in the fore-aft frame rail at the base of the transverse frame cross members proximate to the spring mounting pillars.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	2	2	2
Crashes/Fires:	0	0	0
Injury Incidents:	0	0	0
# Injuries:	0	0	0
Fatality Incidents:	0	0	0
# Fatalities:	0	0	0
Other*:	0	0	0

*Description of Other:

Action: Close this Preliminary Evaluation.

Engineer: Thomas Bowman
Div. Chief: Richard Boyd *RB*
Office Dir.: Kathleen C. DeMeter

Date: 06/18/2004
Date: 06/18/2004
Date: 06/18/2004

Summary: ODI has not found any additional complaints beyond the original VOQs that formed the basis for the initiation of this investigation. The three VOQ-complaint vehicles did not indicate a trend or pattern in that they differed from each other in model year, (1998, 1999, and 2002), vehicle configuration, and frame supplier.

The 2002 vehicle was a prototype in which the frame-related defect was detected and corrected after the sole affected vehicle was put in service. The frame supplier inspected another of the vehicles and stated that the vehicle exhibited damage to the underbody indicative of having been exposed to one or more high lateral forces consistent with extracting a "wedged" vehicle.

See the attached technical report for full details.

*msk
faxed on
6/22/04*

Closing Report – PE04-013

Cracks in the Frame Installed in Model Year 1998-1999 (*) Forest River Towable Recreational Vehicles

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- (2) Background**
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(*) ODI initiated this investigation based on the information provided in VOQ 10051803 and 10053847, both of which describe frame cracks that developed in 1999 model year Forest River RV vehicles. Based on the VIN numbers provided by the owners, the vehicles are actually model year 1999 and 1998 vehicles, respectively.

(1) Subject

This report addresses cracks in the frame installed in 1998-1999 model year Forest River "fifth wheel" towable recreational vehicles.



Complaint Vehicle # 2, 1998 Forest River VIN 4X4TSAP29WAXXXXXX.

Source: Vehicle Owner

To assure consumer's privacy, ODI has redacted (blanked) the final six digits of the VIN and has referred to these vehicles as "Complaint Vehicles" in this report rather than using the VIN as the vehicle identifier.

(2) Background

ODI opened Preliminary Evaluation PE04-013 on February 2, 2004, based on two VOQ complaints (10051803 dated December 18, 2003 and 10053847 dated January 12, 2004), both of which describe horizontal cracks that developed in the longitudinal (fore-aft) frame members installed in Forest River fifth wheel RVs. Photographs of the area of the frames exhibiting cracks are provided in Attachments A and B.

ODI conducted a search for potentially related complaints from the Agency historical files and identified VOQ 8009651 dated May 13, 2002, as being potentially related.

Following the receipt of the first VOQ (10051803), ODI contacted the vehicle owner and requested that the owner send photographs to document the condition of the vehicle frame. After the owner sent the photographs, ODI notified Forest River of the Agency's concern and forwarded the photographs for review. Forest River responded to ODI with a letter dated December 31, 2003 in which Forest River outlined a proposal for the owner to have the vehicle returned to Steelco Frame Company, Bloomington, California to have the frame inspected and repaired.

On January 12, 2004, ODI received a VOQ (10053847) reporting a frame cracking complaint from the owner of a 1998 Forest River towable RV. This complaint appeared to report a condition similar to that reported in the earlier December 18, 2003, complaint (VOQ 10051803). This owner also reported that the "main cross beam support structure between the two 'I-beams' had been cut out and removed by the manufacture [sic] in order to install the sewer tank and water lines." Photographs of the frame and cross member are provided in Attachment B.

On February 2, 2004, ODI opened Preliminary Evaluation PE04-013 based on the two VOQs reporting an apparently similar frame cracking condition.

On February 3, 2004, ODI issued an Information Request to Forest River and received a response dated April 6, 2004. Due to a computer system failure that allegedly occurred at Forest River in October 2000, certain of the requested production, sales, and warranty records prior to October 2000 are no longer available. Since few purchaser's records for 1998-1999 are available, ODI was severely limited in the ability to contact owners of 1998-1999 (peer-vintage) Forest River vehicles to determine whether or not these owners have experienced vehicle frame cracking similar to those reported in the complaint vehicles.

On June 3, 2004, ODI interviewed a representative of Steelco Frame Company. Forest River had previously advised ODI that Forest River would normally direct frame repairs to their frame supplier. Forest River records indicated that Steelco had been the supplier of the frame for Complaint Vehicle # 1. ODI asked about any observations that the Steelco representative may have made while repairing the frame of Complaint Vehicle # 1. ODI also inquired as to the approximate frequency that Steelco has repaired frames for Forest River vehicles. The Steelco representative advised ODI that Complaint Vehicle #1 exhibited indications of unusual contact in the underbody rear indicative that the vehicle may have been pulled laterally as if to free a wedged vehicle. The Steelco representative also advised that ODI that frame repairs are infrequent (approx 5 or 6 to date) and generally have been performed to repair frames that have been subjected to unusual events (such as impact or rollovers).

Note: Steelco did not repair the frame reported in Vehicle Complaint # 2 (VOQ 10053847). The owner of this vehicle had made arrangements to have the frame repaired at a repair center independent of Forest River RV.

(3) Population

The following table summarizes the production of Forest River vehicles.

Model Year	Number of Fifth Wheel Trailers Manufactured
1997	(*) 584
1998	(*) 384
1999	(*) 368
2000	(*) 315
2001	(*) 4475
2002	8754
2003	13138
2004	13600
Total	42618

Source: Forest River information provided to ODI on April 6, 2004

(*) Production volumes have been summarized as reported by Forest River. 1997-2001 model year production volumes are likely to be understated due to the loss of computerized records at Forest River in October 2000.

Scoping – Based on the VOQ complaints, ODI tentatively has scoped the general issue affecting Forest River vehicles manufactured in 1998 -1999. ODI is not able to develop a more precise scoping because there are only three complaint vehicles representing model years 1998, 1999, and 2002 whose owners have filed complaints with ODI. (In response to ODI's requests, Forest River claims that they are unaware of any additional complaint vehicles.) According to Forest River RV, each of the three complaint vehicles was equipped with a frame manufactured in a different design configuration, with frames supplied by different suppliers, and assembled at different manufacturing plants. These differences are itemized in Section 6, "ODI Analysis."

(4) Product Description

Suspect vehicles are frame assemblies installed in 1998-1999 model year Forest River fifth wheel towable recreational vehicles.

Attachment A and B contains selected photographs of the areas of the vehicle frames installed in Complaint Vehicle # 1 and Complaint Vehicle # 2 that had exhibited cracks.

(5) Product Changes

According to Forest River's April 6, 2004 response to Information Request No.19, "The only change that was made [to the frame] is associated with the VIN 4X4TSMH232T [XXXXXX, Complaint Vehicle # 3]. The next frame built was built to the modifications required in moving the axles. Forest River, Inc. does not have any specifications on the change. Zieman's engineering staff did this."

As noted below in Section 6, "ODI Investigation," according to Forest River this vehicle was a prototype built with axles that had been incorrectly located on the frame. Forest River further reported that this axle placement error was corrected in subsequent production.

(6) ODI Investigation

ODI conducted the following investigation activities:

ODI Interviewed Three Owners who filed VOQs

ODI conducted phone interviews with the three owners who filed VOQ complaints. The following table summarizes information obtained through these interviews.

Complaint Vehicle – MY (**)	VIN	VOQ	Usage Profile	Estimated Mileage
#1 1999	4X4FSEM25 XCXXXXXX	10051803	RV purchased new by current owner's mother. Steelco (frame repairer) reported the unit had been "bottoming out" and noted damage to leveling jacks and evidence of sideways pull ostensibly to dislodge a "wedged" unit.	Approx. 10,000 miles
#2 1998 Sandpiper	4X4TSAP29 WAXXXXX X	10053847	RV purchased new by current owner's father. Forest River claims they have no record of complaints or repairs to this frame. Owner reported evidence of modifications (section removed) to the frame cross members	Approx. 10,000 miles
#3 2002	4X4TSMH23 2TXXXXXX	8009651	RV purchased new and later re-purchased by Forest River after owner complaint. Forest River claims that this vehicle was a prototype and that Forest River learned "the hitch weight was not satisfactory... we then moved the axles back... but the cross members were not adjusted along with the axle movement...this was corrected on the next unit built."	Unknown

(**) Owners reported that Complaint Vehicle 2 was a 1999 model. ODI has determined the model year by using the VIN (10th position) as the indicator of the appropriate model year.

Since each of the complaint RVs had been originally purchased as new vehicle by a family member who was closely related to the current owner, ODI is confident that owners would have been aware of the vehicle histories including potentially significant events such as abuse, prior crashes, etc.

ODI Reviewed the Information that Forest River Provided on April 6, 2004 -

ODI's analysis addressed the following:

(1) Similarly Equipped Vehicles -

ODI requested Forest River to provide a list of "sister" vehicles (equipped with similar frames) to the vehicles that formed the basis for ODI's investigation. Forest River was able to provide the dealers' names and contact information for all of the vehicles identified but was able to provide the consumer-purchaser's name for only a small number of vehicles equipped with similar frames. Following is a summary of the information provided.

Complaint Vehicle	VOQ	Number of Sister Vehicles Manufactured	Number of "Sister" Vehicles for which the original consumer-owner's identity is known	Number of Owners of "Sister" Vehicles who were aware of a frame problem in their vehicle
#1	10051803	133	2	0
#2	10053847	145	4	0
#3	8009651	196	12	0

None of the owners of "sister vehicles" who ODI successfully contacted indicated that their vehicles experienced any problems with the frame. However, this information is of marginal value since ODI had been able to contact so few owners (6 of 18) and because the associated vehicles largely represent more recent vintage vehicles (2003-2004 model year vehicles), which typically would have accumulated fewer service miles, than 1998-1999 model year vehicles. In some cases, owners reported that the vehicles had been parked (adding no service miles) since purchase.

(2) Trend Analysis

ODI reviewed the complaints to determine whether any trends were evident.

(a) ODI notes that the three VOQ complaints represent production from three different model years 1998, 1999, and 2002 and that the associated model years have a one to three year gap in the manufacturing dates between the affected Complaint Vehicles.

Forest River has informed ODI that they are not aware of any other complaints for frame cracking.

Also, according to Forest River, the frame has not been changed significantly since 1996 indicating that the frames have been reasonably consistent in design since that time.

(b) Following is a summary of the complaint vehicle, frame style, and frame supplier.

Complaint Vehicle	Model Year (Exact Day of Vehicle Build Not Available)	Frame "Unit Model"	Frame Supplier
# 1	1999	SEF36RL3S	Steelco
# 2	1998	SAT38FKWB	Quality Frame
# 3	2002	SMT28SP	Zieman

ODI notes that there does not appear to any common factor evident among the model years of production, the frame models, or the frame suppliers associated with the three complaint vehicles.

(3) Forest River Information Regarding Claims and Other Incidents –

In response to ODI's inquiry regarding other incidents, Forest River stated,

"We have not had a complaint on the VIN 4X4FSEM25XCXXXXXX [Complaint Vehicle # 1] associative products that were manufactured before or after that VIN number. We are unaware of any problem with the VIN 4X4TSAP29WAXXXXXXX [Complaint Vehicle # 2] associative product and have not found any complaints in our files. We do not have a record of a complaint or warranty claim on the one that was reported to NHTSA."

We have made corrections to the VIN 4X4TSMH232TXXXXXX [Complaint Vehicle #3] associative products on the next frame [manufactured]. To our knowledge the problem has been eliminated."

ODI recognizes that Forest River may have limited information since Forest River has advised ODI that, "we have attempted to include all the information that was requested by searching our computer warranty system but we were unable to go beyond October 2000 with any certainty. The computer system that was in place prior to this [time] had a total failure and the records were lost."

ODI is reasonably confident that the lost repair records are not a significant loss to the integrity of this investigation because the characteristics of metal fatigue (such as is suggested in the photographs of the complaint vehicles) are likely to develop and become more evident with increased product usage (service miles). Warranty records lost in October 2000 pertaining to 1998-2001 model year vehicles may have indicated "infant mortality" problems such as quality and workmanship problems that typically appear early in a vehicle life, but are unlikely to indicate problems relating to metal fatigue which typically increase in number (incident rate) and severity with product usage (service mileage).

(7) ODI Assessment

ODI initiated the Preliminary Evaluation (PE04-013) based on the concern that one or more fractures in the frame structure could potentially affect vehicle control and cause or contribute to a vehicle crash. The investigation was supported by three VOQs all of which were 1998-2002 model year Forest River fifth wheel towable RVs.

Because it is characteristic for metal fatigue to increase in severity (crack growth) and exposure (number affected) with increasing service usage, ODI is concerned that a frame cracking problem could exist in Forest River towable RVs and that additional incidents may occur in the future.

ODI has concluded that pursuing this investigation further at this time is not likely to be fruitful or cost-effective. ODI believes that it is more appropriate for ODI to monitor VOQ complaints for future activity and respond by initiating additional investigation activity if and when new information makes indicates that it is appropriate to do so.

At the time of this report, ODI is not aware of any fatalities, injuries or crashes that had been by caused or linked to the frame cracking issue. Owners who have

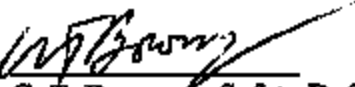
reported frame cracks have detected the problem by the visual appearance of the vehicle itself (vehicle tilt) or through detection (visually evident cracks) suggesting that the vehicle's appearance provides some opportunities for owners to detect when the rigidity of the frame has been compromised by cracks. One owner also described a "popping in the floor" which may also have provided an audible warning.

(8) Conclusions

This investigation is closed. ODI has received three complaints associated with 1998, 1999, and 2002 model year Forest River Fifth Wheel towable RVs. Forest River manufactured more than 43,000 towable RVs from 1997 through 2004 and claims to be unaware of any additional complaints of frame cracks. ODI's investigation has not identified any additional vehicles to supplement the three reports that formed the basis for the initial investigation.

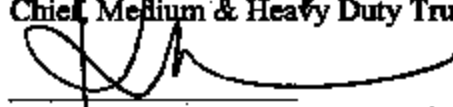
In response to ODI's inquiry, Forest River has stated that they are unaware of any similar problems with frames in associative vehicles. ODI is concerned that Forest River complaint information is incomplete because it is unusual for a vehicle manufacturer to receive fewer complaints than ODI for any particular investigation. ODI is aware that the loss of earlier data (due to Forest River's computer failure) has compromised the ability to obtain complete and comprehensive owner complaints. To partially compensate for this loss, ODI has monitored several internet "chat rooms" in which RV owners discuss vehicle complaints, service issues, and the like. ODI has not detected any discussions regarding frame cracking in Forest River vehicles through this monitoring activity.

Characteristically, frame cracking due to metal fatigue increases in severity and incident rate with increasing vehicle use (service miles). Therefore, ODI will remain attentive to this situation and pursue this investigation further if and when future incidents and/or circumstances warrant.


G. T. Bowman, Safety Defects Engineer

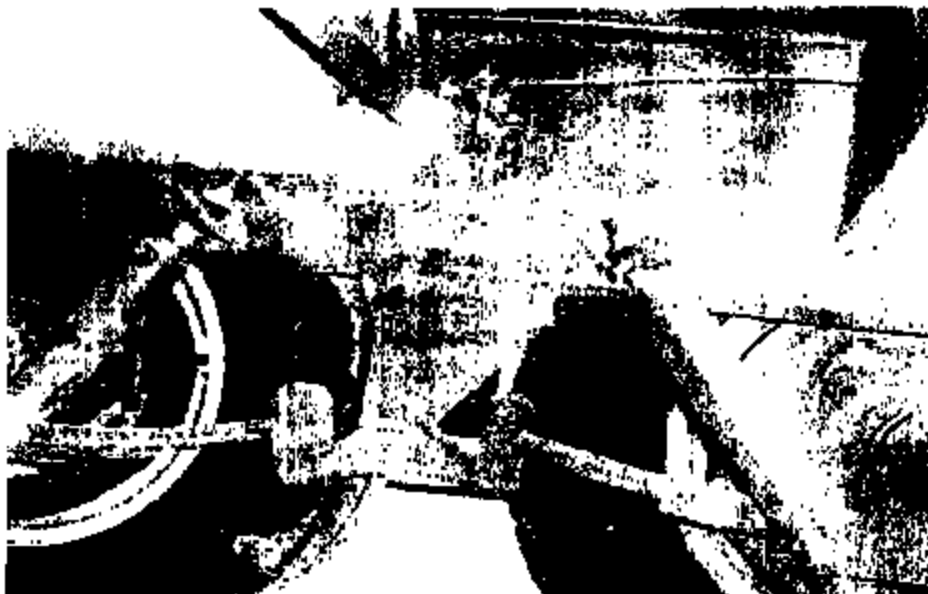
6/18/04
Date

I Concur:

Chief, Medium & Heavy Duty Truck Division

Director, Office of Defect Investigation

6/18/04
Date
6/18/04
Date

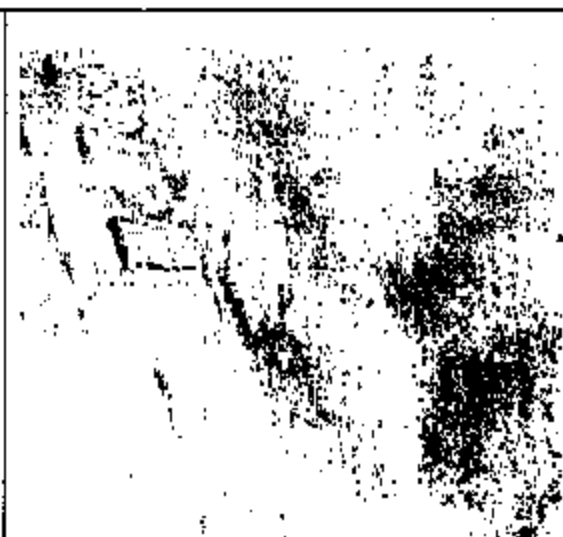
**Photographs taken of Complaint Vehicle # 1
Forest River 1999 36-foot Fifth Wheel Trailer**



The crack in fore-aft frame member at the base of the lateral cross member is shown on the right side of the photograph. The crack extends approximately 25 cm (12 inches) in an upwardly direction through the center of the fore-aft frame member.



View from the inside of the fore-aft frame member at the transverse frame member attachment point.



View from the outside of the fore-aft frame member.

**Photographs taken of Complaint Vehicle # 2
1998 38-foot Fifth Wheel Forest River Trailer**

The photographs were furnished by the vehicle owner at ODI's request and indicate that horizontal cracks have developed at four locations in the fore-aft frame members. Each of the four cracks is approximately 25 cm (12 inches) in length. The cracks are visually evident at the base of each of two transverse frame members that connect the two fore-aft frame members to each other.



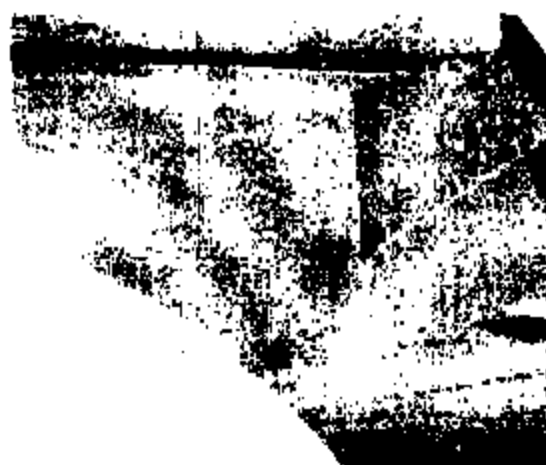
**Fore-aft Frame Viewed from Outside at
Driver's Side (Left) Forward Wheel**



**Fore-aft Frame Viewed from Outside at
"Passenger Side" (Right) Front Wheel**

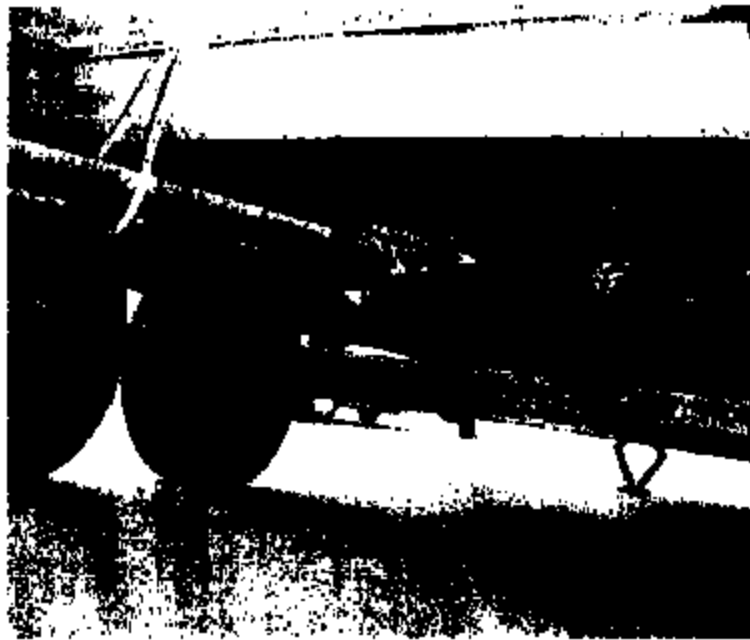


**Fore-aft Frame Viewed from Outside at
Driver's Side (Left) Rear Wheel**



**Fore-aft Frame Viewed from Outside at
"Passenger's Side" (Right) Rear Wheel**

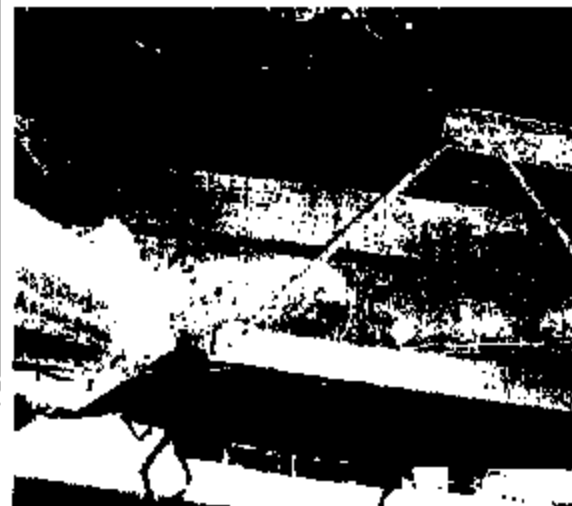
Complaint Vehicle # 2 (Continued)



Underside of Fifth Wheel Trailer indicating that a transverse "lattice" frame member had been cut to accommodate the installation of the rearward directed (black) plastic waste water pipe.



View of underside facing forward. The plastic drainpipe is shown on the right side of the photograph. The left side of the cut lattice-work type lateral cross member is shown in mid-frame.



View of underside facing forward. The plastic drainpipe is shown on the left side of the photograph. The right side of the cut lattice-work type lateral cross member is shown in mid-frame.

PE04-013, Attachment C, Sheet 1 of 3

The following is a summary of the phone interviews (and interview attempts) to owners of vehicle equipped with frames similar to the frames installed in the complaint vehicles.

Vehicles Equipped with Frames Similar to Complaint Vehicle # 1

Forest River identified 131 "Sister Vehicles" to Complaint Vehicle # 1 (VOQ 10051803). Forest River provided owner's names for two of these vehicles. Forest River records list only the dealer's name and contact information for the remaining 129 vehicles.

Sister Vehicle	VIN	Activity /Findings
# 1	4X4FSEM23 <u>2</u> CXXXXXX	No phone listing found
# 2	4X4FSEM25 <u>2</u> CXXXXXX	4/30/04. Owner advised that this is a seldom-used (less than 1000 miles accumulated) 2002 model vehicle which has not had any problems relating to the frame (ODI Note: recent vintage – limited mileage units are unlikely to exhibit cracks)

Underlined value (tenth position) in VIN number indicates model year ("2"= 2002).

Vehicles Equipped with Frames Similar to Complaint Vehicle # 2

Forest River identified 145 "Sister Vehicles" to Complaint Vehicle # 2 (VOQ 10053847). Forest River provided owner's names for four of these vehicles. Forest River records list only the dealer's name and contact information for the remaining 141 vehicles.

Sister Vehicle	VIN	Activity /Findings
# A	4X4TSAP23 <u>X</u> AXXXXXX	5/10/04. Owner purchased a 1999 model year 38' Sandpiper. The trailer was put on a campsite and was not moved after purchase. Owner sold the trailer two years ago.
# B	4X4FSEM25 <u>2</u> CXXXXXXX	5/10/04. Owner had purchased a 2000 38' (or 39') Sandpiper. The trailer had been used extensively in GA, TX, MS, and ARK. Sold in July 2003. Only problem noted with frame had been rust in the forward section. (Owner also volunteered that the vehicle "went through" tires very fast; had had 4 blow-outs in a single day.)
# C	4X4TSAP25 <u>Y</u> AXXXXXXX	5/10/04. Owner had purchased RV in 2000 and had unit delivered from dealer to campground (approx 40 miles). The RV trailer has not been moved since and is now for sale.
# D	4X4TSAP21 <u>Y</u> AXXXXXXX	5/10/04 left message, no response 5/18/04 left message, no response

Underlined value (tenth position) in VIN number indicates model year ("X"=1999, "Y"=2000, "1"= 2001, and "2"=2002.

Vehicles Equipped with Frames Similar to Complaint Vehicle # 3

Forest River identified 196 "Sister Vehicles" to Complaint Vehicle #3 (VOQ 10053847). Forest River provided owner's names for eight of these vehicles. Forest River records list only the dealer's name and contact information for the remaining 184 vehicles.

Sister Vehicle	VIN	Activity /Findings
# a	4X4TSAH273TXXXXXX	5/11/04. left message -Vehicle has now been sold. Only problem had been with axle flexing due to axles being "too light." Axles were replaced with larger tube. Had operated 5-10,000 miles. Other model names to look for: Salem, Cardinal, Sierra. Owner is not aware of "jamboree" situations as possible sources to find Forest River vehicles. (opined that Forest Rivers more likely to be found on the west coast)
# b	4X4TSAH284TXXXXXX	5/11/04 left message -- 5/19/04 Owner purchased a new 2004 vehicle. Has taken on 3 trips and has accumulated less than 1000 miles
# c	4X4TSEH224TXXXXXX	5/13 disconnected number
# d	4X4TSEH214TXXXXXX	Corey Hardy - no number
# e	4X4TSAH294TXXXXXX	5/13 recording call "cannot be completed"
# f	4X4TSAH234TXXXXXX	5/13 left initial portion of message; second attempt - set on fax no chance for message
# g	4X4TSEH214TXXXXXX	5/13 recording "call cannot be completed as dialed"
# h	4X4TSEH273TXXXXXX	5/13 Wrong number provided

Underlined value (tenth position) in VIN number indicates model year ("3"=2003, "4"=2004).