



P.O. Box 460

Scott, LA 70583

Office Phone: 337-266-9797

Cell Phone: 337-501-4264

Fax: 866-543-0580

E-mail: [mudloss@aol.com](mailto:mudloss@aol.com)

# The Airless Adapter (A.A.)



*“A Patented Product”*



# Airless Adapter (A.A.) Benefits

1. Minimize Corrosion
2. Eliminate Air
3. Reduce Barite Consumption
4. Reduce Defoamer Consumption
5. Maintain a More Constant Bottom Hole Hydrostatic Pressure (BHHYDP)
6. Keep MWT *out* same as MWT *in*
7. Save Rig Time
8. Enhance Polymer Performance

***Aerated Mud = Higher Mud Costs***



# Actual Letter Received from Barite Supplier

*To Our Valued Customers,*

*Due to continued price escalation on imported crude ore, we are announcing a price increase effective November 11,2011.*

*This increase will be effective on any orders shipped on November 11, 2011 and after.*

*Thank you for your continued business and we look forward to working with you in the future.*

*Charles Renner  
Excalibur Minerals LLC*

**Barite suppliers are controlled by the Chinese. We are at their mercy- Let's use less barite.**



# Minimize Corrosion

- Testing shows some hoppers put the volume of air that is in a 14'X 80'X 8' space into the mud every five minutes.
- Air is 20% oxygen and it is the oxygen that feeds corrosion. In some mud types, this oxygen must be removed with oxygen scavengers or will cause a very serious corrosion problem.
- Using the Airless Adapter (A.A.) keeps oxygen out and by doing so, minimizes corrosion.



# Eliminate Air

- When air gets into the mud the density is reduced. In some circumstances when the air breaks out of the mud, the density increases again. With air in the mud, the mud weight is unable to be controlled. The mud weight must be able to be controlled in order to control hydrostatic pressure and run the job properly. Without the Airless Adapter (A.A.) this is very difficult to do.



# Reduce Barite Consumption

- When enough air enters the mud additional barite is required to raise the MWT to the desired level. This is barite that should not have been used which adds to the cost of the mud. The Airless Adapter (A.A.) keeps air out which requires less barite and significantly reduces costs.



# Reduce Defoamer Consumption

- Less air in the mud means lower defoamer consumption. Certain mud types foam up due to their nature such as calcium based, brines and salt muds. These mud types should definitely have the Airless Adapter (A.A.) since air should not be added to a system that already has a foaming problem. The Airless Adapter (A.A.) makes the problem manageable.





# Maintain a More Constant Bottom Hole Hydrostatic Pressure

- With the introduction of the air into the mud this guarantees an uncertain Bottom Hole Hydrostatic Pressure (BHHYDP). Can we drill a well with this type of problem? The answer is yes. However you can do a much better job if you can control BHHYDP. The only way to do this is with the Airless Adapter (A.A.).



# Keep MWT *out* same as MWT *in*

- Once air enters the mud it compresses going in and expands on the way out. This cycle is what causes uncontrolled BHHYDP which results in hole problems.
- With the Airless Adapter (A.A.) MWT *in* and MWT *out* are the same unless you have gas at the shakers. This makes the parameters more accurate and the supervisor can make a more informed decision.



# Save Rig Time

- During a weight up operation it is good drilling practice not to proceed until  $MWT_{out} = MWT_{in}$ . With the Airless Adapter (A.A.) this happens within ten minutes of calculated strokes and then drilling can resume. Without the Airless Adapter (A.A.) this takes as much as one hour before drilling can resume.



# Enhance Polymer Performance

- Oxygen in the mud depletes the effectiveness of polymers by 30%. If polymer costs are \$300 per bag, \$90 of polymers are lost from each bag. With the Airless Adapter (A.A.) you keep oxygen out and receive the full benefit of the polymers.

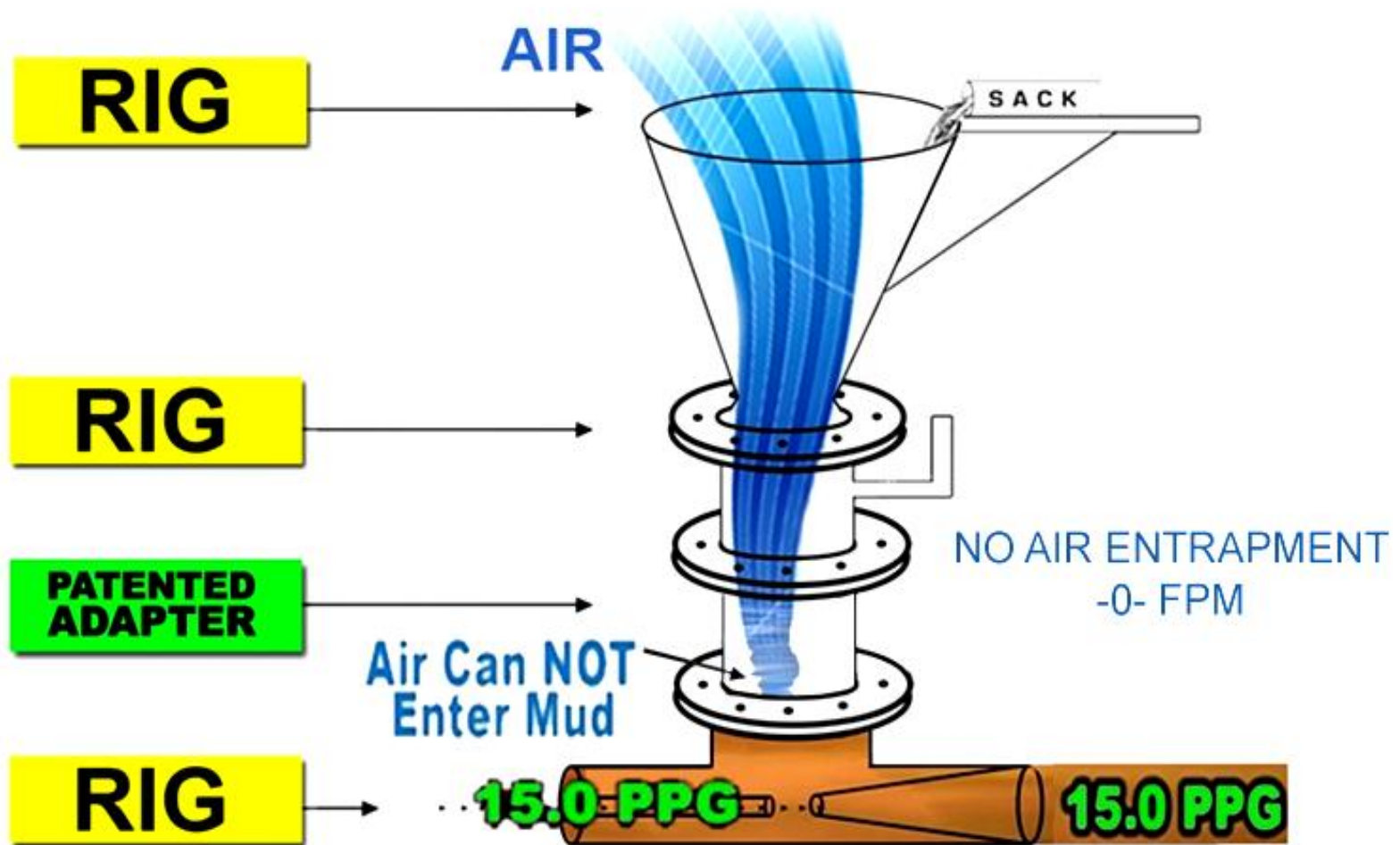
*Without the Airless Adapter, polymers are only working up to 70% of their full potential!*



# Conventional Rig Hopper Air Entrapment



# T.A.M.M. No Air Entrapment



# Minimize Pump Problems Due to Aerated Mud

- On countless jobs too much air gets into the mud causing loss of pressure in rig pumps and causing cavitation problems in priming centrifugal pumps.
- Troubleshooting these problems is very costly in terms of rig time.



# Lower Equivalent Circulating Density (ECD)

- As aired up mud is pumped down the drill pipe, it compresses and the MWT increases. This in turn increases ECD.





# Reduce Risk of Loss Circulation & Kicks

- An increase in MWT by one point can cause loss of circulation and one point decrease in MWT can cause a kick. The Airless Adapter provides MWT stabilization.



# Continuous use of Mixing Hopper while:

- **Taking a Kick**
- **Loss of Circulation Events**

During the above events it is important to make the most accurate MWT possible and the hopper must be used 24/7. With a conventional hopper it is impossible to get an accurate MWT. Only with the patented Airless Adapter can the hopper be used 24/7 without fear of trapping air in the mud and having a wrong MWT.







# Purpose of Testing

- To see if there is air in the mud and if the Airless Hopper can eliminate aeration.
- The tests were performed using the Fann True Weight pressurized scale. The procedure is to weigh the mud without applying pressure then weighing the same sample under pressure. This shows how much entrained air is in your mud system. According to Fann, on tests of 50 rigs they found the wells to have from 0% to 14% air in the systems. Fluid Solutions conducted the test using the Airless Hopper system. The operator did not use the airless hopper until air became a problem.
- The first two slides of data (Slides 25 & 26) were collected from the Patterson A 8 for Liberty Resources. The hopper was installed on Bronco 15.



# Purpose of Testing

- The tests show that after running the hopper for 4 hours all air is eliminated from the mud. (Slide 23)
- There is no air in the mud while the Airless Hopper is in use. (Slide 24)
- The Bailey Partners Well showed no problem with air for first few days but by the 16th and 17th there were serious problems. The Airless hopper was utilized and all air was removed. (Slide 27)
- **NOTE:** Prior to turning on the Hopper, 4 five gallon pails (at a cost of \$200.00 per can) of defoamer had been used. Once hopper was turned on @ 20:30, all air was out of mud within 5 hours and there was no need for the defoamer and could have saved money for the customer.



Arrived on rig: 11/5/2007  
Bronco 15 Patterson A-8

MWT 11.9 - not circulating. Operation, tripping in hole with DP to drill out cement. Mud had not circulated in a while, there was no air in mud. Kicked in hopper and in a matter of 25 minutes the mud was aired up. It was a closed system as they were TIH and not circulating down hole. At that point the aired up mud had a differential of .2 ppg. The discharges were 2 1/2' from the mud line.

Pit #1 is the suction pit and Pit #2 is the pit just before the suction. Hopper discharging in both pit.

TIME	PIT #1	PIT #1	PIT #2	PIT #2
	REG	AIRLESS	REG	AIRLESS
9:06	11.9	12.1	11.9	12
9:15	12.9	12.1	12.1	12.3
9:40	12.1	12.2+	12.1	12.3
10:00	12.1+	12.2	12.1+	12.3
10:48	12.0++	12.0+	12.1+	12.2
11:21	12.0+	12.0+	12.0+	12.1
12:00	12.1+	12.1	12.1+	12.2
13:30	12.1	12.1	12.0+	12.0+
14:00	12.1+	12.1+	12.1+	12.1+

It took about 4 to 5 hours to work air out of mud using the Airless Hopper.

From 10:00 am till test were complete there was no air in the mud.

Went back to the rig on 11-9-07 and retested the hopper with the pressurized scale. The results are great. When we arrived on location they were using the Airless Hopper and had no air in the mud. For 5 1/2 hours the mud was tested at the suction pit, the pit prior to the suction pit and at the possum belly. The results are as follows:

TIME	PIT #1	PIT #1	PIT #2	PIT #2	P.B.	P.B.
	REG	AIRLESS	REG	AIRLESS	REG	AIRLESS
10:30	13.3	13.3	13.3	13.3	13.3	13.3
11:15	13.3	13.3	13.3	13.3	13.3	13.3
12:00	13.3	13.3	13.3	13.3	13.2+	13.2+
1:00	13.3+	13.3+	13.3+	13.3+	13.2	13.1
2:00	13.6	13.6	13.6	13.6	13.2	13.2
3:00	13.8	13.8	13.5	13.5	13.3	13.3
4:00	13.8	13.8	13.6	13.6	13.4	13.4

While mud was being raised .5 ppg, no air was trapped in mud. Continuous use of the barite hopper would have trapped air in the mud.

The hopper saved barite on this application, because there was no light mud due to air entrapment.

Test procedure: Get sample of mud and weigh it. Use same sample but with the pressure adaptor to compress the air bubbles and get the true mud weight.

Until air is worked out the pressure weight will be higher.

Once air is eliminated with the hopper then they are the same.

This is what the tests have revealed.



TIME	DATE	OPERATOR	RIG	MUD COMPANY	WELL		
	1/9/2008	LIBERTY	BRONCO 15	QUALITY	BAILEY PARTNERSHIP #1		
	MWT S/PIT M/SCALE	MWT S/PIT P/SCALE	MWT PIT 1 M/SCALE	MWT PIT 1 P/SCALE	MWT P/B M/SCALE	MWT P/B P/SCALE	
2:15	9.3	9.3	9.4	9.4	9.3	9.3	
2:45	9.4	9.5	9.4	9.5	9.4	9.4	
3:15	9.4	9.5	9.4	9.5	9.4	9.4	
3:45	9.4	9.5	9.4	9.5	9.4	9.4	
4:15	9.4	9.5	9.4	9.5	9.4	9.4	
4:45	9.4	9.5	9.4	9.5	9.4	9.5	
5:15	9.4	9.5	9.4	9.5	9.4	9.4	

Suction Pit

Suction Pit

Pit 1

Pit 1

possum belly

Hopper being used:

RIG

FSI

Weighting Up:

Yes No

Mixing Chemicals:

Yes NO

Mixing Barite: Yes NO

Total Depth:

TIME	DATE	OPERATOR	RIG	MUD COMPANY	WELL		
	1/11/2008	LIBERTY	BRONCO 15	QUALITY	BAILEY PARTNERSHIP #1		
	MWT S/PIT M/SCALE	MWT S/PIT P/SCALE	MWT PIT 1 M/SCALE	MWT PIT 1 P/SCALE	MWT P/B M/SCALE	MWT P/B P/SCALE	
	9.5	9.6	9.5	9.6	9.4	9.5	
18:30	9.6	9.7	9.6	9.6	9.4	9.4	
	9.7	9.7	9.6	9.6	9.4	9.5	
19:30	9.7	9.7	9.6	9.6	9.4	9.5	
	9.6	9.6	9.5	9.6	9.5	9.5	
20:30	9.5	9.6	9.5	9.6	9.5	9.5	
	9.5	9.5	9.5	9.4	9.4	9.5	
21:30	9.5	9.6	9.5	9.5	9.5	9.5	
	9.5	9.5	9.5	9.5	9.5	9.5	
22:30	9.6	9.6	9.5	9.5	9.5	9.6	
	9.6	9.6	9.5	9.6	9.5	9.6	
23:30	9.7	9.6	9.6	9.6	9.5	9.6	
	9.6	9.6	9.6	9.5	9.5	9.6	
0:30	9.7	9.7	9.5	9.5	9.5	9.6	
	9.7	9.6	9.6	9.6	9.5	9.6	
1:30	9.5	9.5	9.5	9.5	9.4	9.5	
	9.6	9.6	9.5	9.5	9.4	9.6	
2:30	9.5	9.5	9.5	9.5	9.5	9.5	
	9.6	9.5	9.5	9.5	9.4	9.5	
3:30	9.5	9.5			9.4	9.4	
	9.5	9.5	9.5	9.5	9.5	9.5	
4:30	9.6	9.5	9.5	9.5	9.4	9.5	
	9.5	9.4	9.5	9.5	9.4	9.4	
5:30							

Suction Pit

Suction Pit

Pit 1

Pit 1

Possum belly

Hopper being used:

RIG

Mixing Chemicals:

Yes

Mixing Barite: NO

Weighting Up:

No

Total Depth:

TIME	DATE	OPERATOR	RIG	MUD COMPANY	WELL	HOPPER BEING USED
	1/18/2008	LIBERTY	BRONCO 15	QUALITY	BAILEY PARTNERSHIP #1	
	MWT S/PIT M/SCALE	MWT S/PIT P/SCALE	MWT PIT 1 M/SCALE	MWT PIT 1 P/SCALE	MWT P/B M/SCALE	MWT P/B P/SCALE
	9.6	9.8	9.6	9.8+	9.6	9.9
18:30	9.5+	9.8	9.6	9.8+	9.6	9.8+
19:30	9.5	9.7+			9.5+	9.8
20:30	9.6	10.0+				
						FSI HOPPER
21:30	9.6+	9.9	9.6+	9.8+	9.6+	9.9
	9.6+	9.9+			9.6	9.9
22:30	9.6+	9.7+			9.7	9.9
23:30	9.7+	9.8+	9.7+	9.8	9.7	9.8
	9.7	9.9			9.7	9.7
0:30	9.7+	9.8			9.8	9.8
	9.7	9.7			9.7	9.7
1:30	9.7	9.7	9.7	9.7	9.7	9.7
	9.7	9.7			9.8	9.8
2:30	9.7	9.7			9.7+	9.7+
	9.7+	9.7+			9.7	9.7
3:30	9.7	9.7	9.7	9.7	9.7+	9.7+
	9.7	9.7			9.7	9.7
4:30	9.7	9.7			9.8	9.8
5:30						

Suction Pit

Suction Pit

Pit 1

Pit 1

Possum belly

Hopper being used:

**RIG**

**FSI**

Weighting Up:

**NO**

Mixing Chemicals:

**YES**

Mixing Barite: **NO**

Total Depth: 10,000 ft