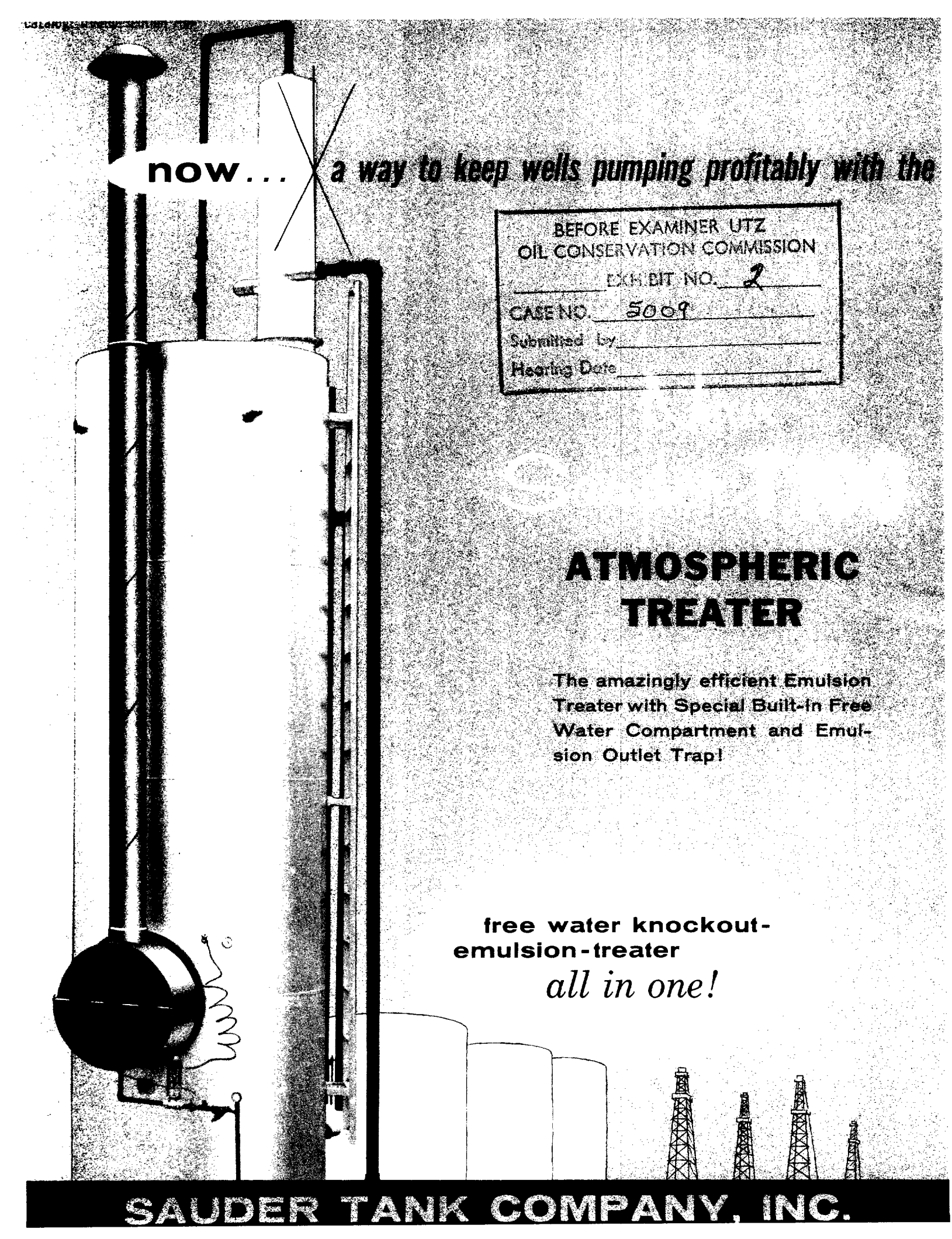


now... a way to keep wells pumping profitably with the

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 5009
Submitted by
Hearing Date

ATMOSPHERIC TREATER

The amazingly efficient Emulsion Treater with Special Built-In Free Water Compartment and Emulsion Outlet Trap!

free water knockout-
emulsion-treater
all in one!

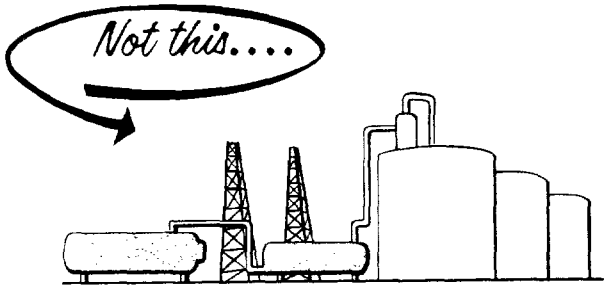
SAUDER TANK COMPANY, INC.

- **Eliminates Need for Extra Equipment**—with its ability to remove large quantities of free water without heating, the T100 eliminates eventual need for installing special free water knockout, when water production increases.
- **Reduces Fuel Consumption**—in an area where no production gas is available and fuel must be purchased to fire the treater, the T100's capacity to remove free water cold, can result in tremendous saving.
- **Increases Total Treatment Capacity**—exclusive baffle plate, perforated spreader, and outlet trap are designed for maximum heat transfer and emulsion breakdown. Speeds treatment; reduces settling time, by passing through a pre-heat section.
- **Prolongs the "Profit-Life" of Older Wells**—by eliminating the cost of expensive pre-units required by other systems and the fuel required to operate them.

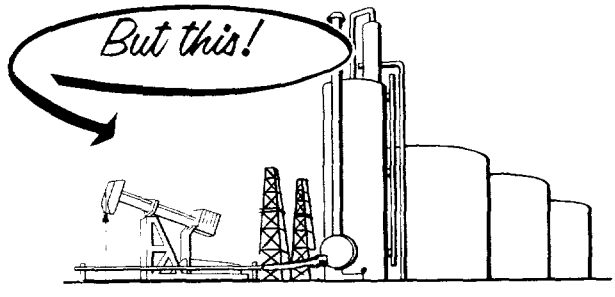
As wells progress in production, the percentage of free water in the well stream shows a steady increase. Some wells are produced to the point where the percentage of free water encroachment reaches as much as 98%. This results in the need for additional separation and treatment equipment.

Other systems require separate free water knockouts and/or direct or indirect pre-heaters ahead of the receiver in order to efficiently separate and treat the well stream from older wells. This means an investment in more equipment and often considerable increase in fuel costs.

With its special built-in baffle plate, perforated spreader and emulsion outlet trap, the Sauder T100 is a free water knockout-emulsion-treater *all in one!* No pre-units are required which means that day-to-day fuel costs are only about half those of systems using pre-unit direct or indirect heaters. The cutaway illustration and explanation on the opposite page show how the T100's exclusive baffle plate-outlet trap design makes possible this saving in expensive equipment and daily operating cost.



From Well to Free Water Knockout to Heater to Gunbarrel to Storage Tanks



From Well to **Sauder T100 to** Storage Tank

Are you wasting large sums of money heating free water?

Here's simple proof of the savings an operator can effect with this all-purpose tank, using L. P. gas.

Assuming a lease pumps about 500 barrels of free water and oil-water emulsion a day. As the percentage of free water becomes excessive, other systems require either direct or indirect heaters to pre-heat it for efficient breakdown. To heat one barrel 50° requires approximately 17,200 BTU —the amount supplied by 1 5 gallon of propane.

To heat 500 barrels, then, would require about 100 gallons of propane. At 11c a gallon, $11.00 worth of propane is needed to heat a day's output of an average well in a pre-heater. And this assumes 100% thermal efficiency. Actually the average heating unit is only about 50% efficient! The colder the weather the more important this becomes.

That's why the **Sauder T100**—which requires NO pre-heater —can save from $11.00 to $22.00 per day in fuel cost alone at the average older well!

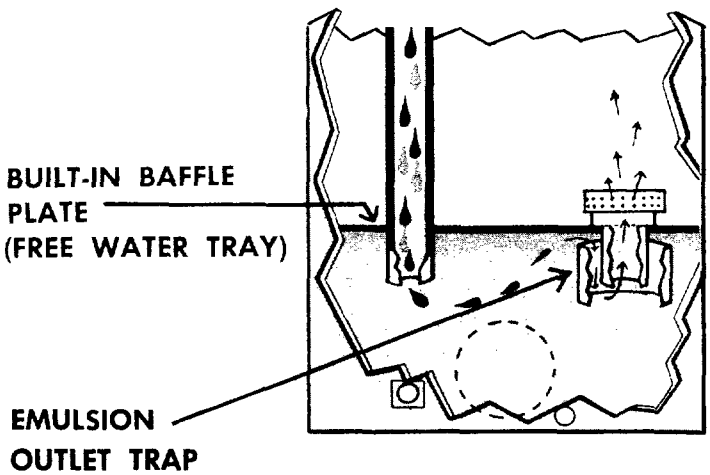
Here's the between and other types of atmospheric treaters...

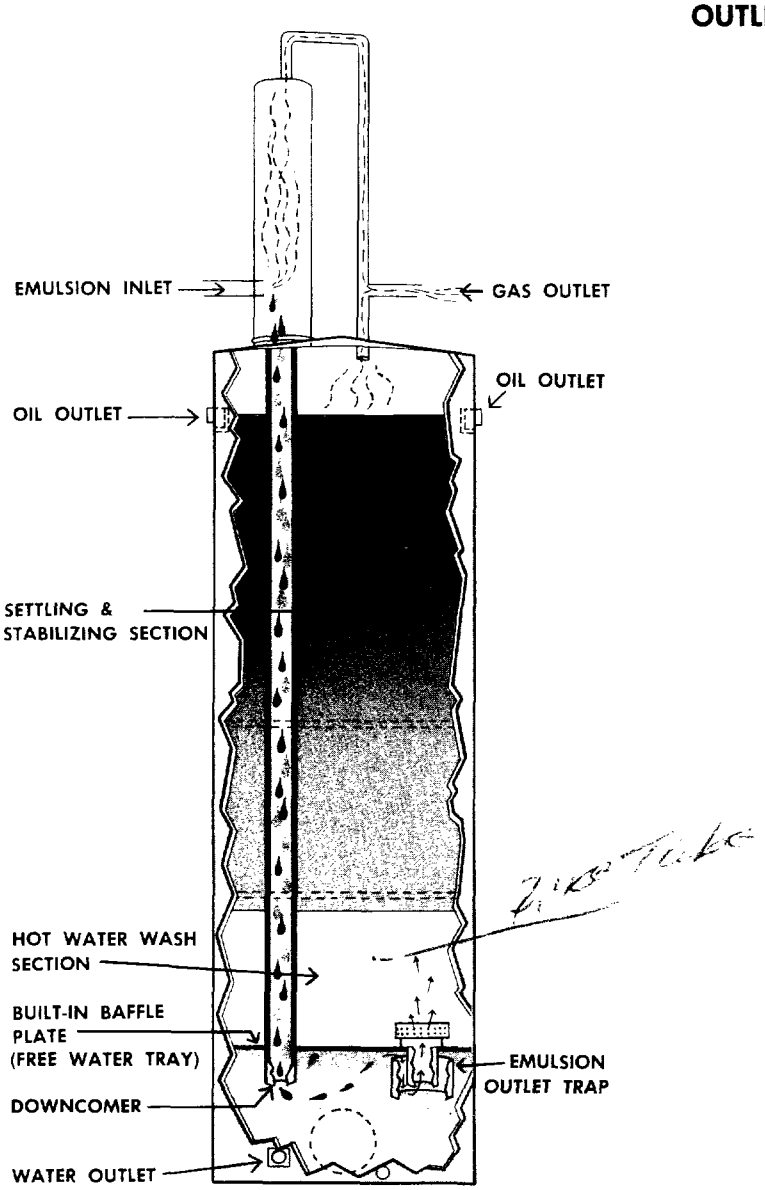
The Surprisingly Simple "Secret" of the T100's Exclusive, Extra-Efficient Operating Principle.

Where other treaters have a perforated spreader plate, Sauder uses a perforated spreader and a solid "Free Water Tray" with two openings. One is for the downcomer pipe, the other for the oil trap and outlet through which the water-oil emulsion must pass before entering the hot water wash section.

Because other treaters do not have this solid plate or outlet trap, they must send emulsion into the hot water wash section at well head temperature. In older wells where water percentage is high, effective treatment by this method is impossible. So water knockouts are used ahead of the treaters.

In the Sauder T100, with its exclusive baffle plate-outlet trap design, the oil water emulsion is **pre-heated within the tank** before entering the hot water wash section. With this design all agitation caused by excessive circulation is eliminated.





The well stream . . . oil, oil-water emulsion, gas and free water . . . enters the top of the tank. The cool gas separates from the fluid in the gas separation section. Fluid then flows through the downcomer into the free water knockout at the bottom of the treater. Here, the free water gravity-settles and is drawn off by a water siphon.

The oil-water emulsion rises to the top of this section, **but not beyond the solid baffle plate.** The outlet trap will not permit the emulsion to enter the hot water wash section until it accumulates to the necessary depth beneath the baffle plate.

This layer of emulsion acts as **insulation** between the hot water wash section and free water knockout section so **no fuel is wasted heating free water.** As proof of this excellent thermal efficiency, tests show that free water is siphoned off at temperatures **almost identical** to original well stream temperatures.

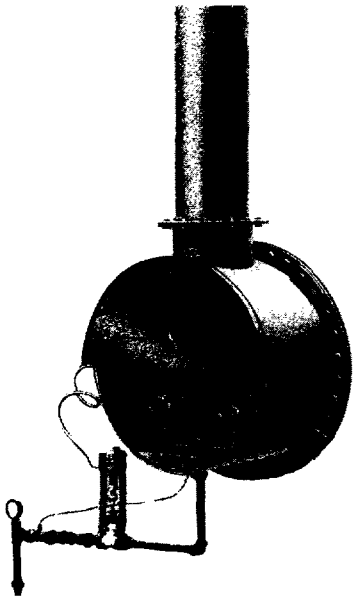
The outlet trap (diagram) carries off only the top 2" layer of emulsion. This part of the emulsion is **already pre-heated** because it has been directly beneath the heated baffle plate which serves as the bottom of the hot water wash section. This pre-heating affords maximum heat transfer and emulsion breakdown.

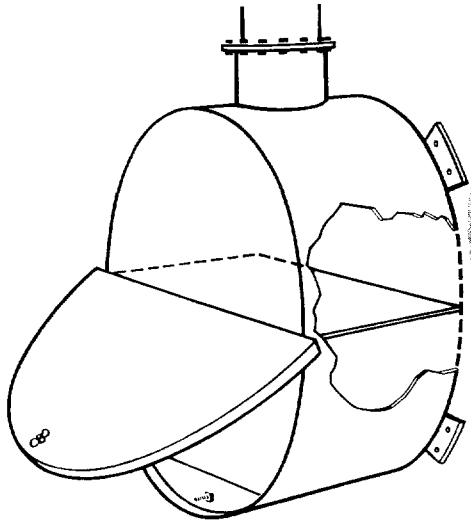
Head pressure then causes the heated emulsion to flow upward from the outlet trap into the spreader box mounted on the baffle plate. This breaks it up into small streamlets beneath the firebox in the hot water section for complete breakdown. The treated oil continues to the top where it is drawn off for storage. The removal point is so designed that only the very top is skimmed from the surface in order to pick up the "light ends" that drop back to the surface through condensation. Heated gas from the settling section rises to mix with the cold gas from the well stream. This causes condensation and the heavier liquids drop into the oil stream. Dry gas is drawn off through the gas outlet.

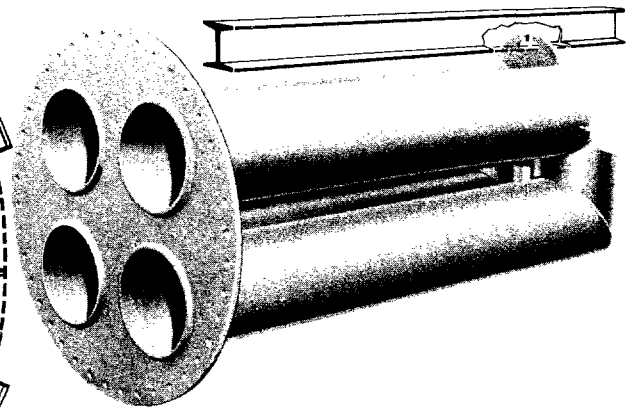
Free water knockout-
Heater-Treater
all in one!

the new Sauder **T100 ATMOSPHERIC TREATER**

Exclusive Features of the Sauder T100







Sauder Exclusive Bonnet Design which is used on the T100 ATMOSPHERIC TREATER is designed for maximum efficiency and easy maintenance. This exclusive bonnet houses the burner assembly in such a way that the air burned is pre-heated for top efficiency. The burner assembly is left in full view to allow for easy adjustment.

The Sauder Twin-U Tube Furnace which is used in the T100 ATMOSPHERIC TREATER is designed for easy maintenance. The entire unit rides an I-beam to allow easy removal. Just loosen and pull . . . the I-beam carries the weight and guides the furnace. This facilitates easy cleaning or inspection if ever necessary. Can't jam or jump I-beam track.

the new ATMOSPHERIC TREATER

Capacities & Specifications

SIZE	4' x 20'	6' x 20'	8' x 20'	10' x 20'
Working pressure, PSI	4	3	2	2
Heating capacity, BTU/Hr.	440,000	660,000	870,000	1,080,000
Heating capacity Bbls. oil/Hr. thru 100° F. temp. rise	29	44	58	72
Heating capacity, Bbls. water/Hr. thru 100° F. temp. rise	12	18	24	30
Approx. treating capacity Bbls. oil/Hr.	6 to 12	12 to 20	20 to 33	28 to 45
Free water, Bbls./Hour	17+	20+	28+	40+
Volume of settling section, Bbls.	28	63	112	160
Bottom, shell and deck thickness	1/4 x 3/16 x 3/16	1/4 x 1/4 x 1/4	1/4 x 1/4 x 1/4	1/4 x 1/4 x 1/4
Firebox description	10 3/4" Double "U"	10 3/4" Double "U"	10 3/4" Double "U"	10 3/4" Double "U"
Firebox heating surface, sq. ft.	45	66.82	88.56	110.31
Flume size	16" O.D. x 6'	16" O.D. x 6'	16" O.D. x 6'	16" O.D. x 6'
Flume thickness	3/16	3/16	3/16	3/16
Manway or cleanout size	18" I.D.	18" I.D.	18" I.D.	18" I.D.
Emulsion downcomer pipe size	6"	6"	8"	8"
Emulsion inlet size	4"	4"	4"	4"
Oil outlet size	4"	4"	4"	4"
Gas outlet size	3"	3"	3"	3"
Bottom drain size	3"	3"	3"	3"
Water siphon outlet size	4"	4"	4"	4"

NOTE: Capacities and consumption figures depend on emulsion type, gas-oil ratios, oil and water gravities, treating temperatures, etc.—natural gas consumption based on 1,000 BTU cubic foot.

Standard equipment: Firebox with burners, gas air mixer, pilot light, stack with brace and downdraft diverter, outside ladder, automatic temperature controller, stainless steel thermometer, 30# fuel pressure gauge, gauge cocks with glasses, gas separation flume, perforated spreader, and free water section.

Optional equipment available at slight extra cost: Filter section, fuel gas regulator, and fuel gas drip.

Hay section extras:

Tank Diameters—4 ft. — 6 ft. — 8 ft. — 10 ft.

Includes 4 foot section or less and one 18" diameter manway. Price based on work done in our shop. Prices quoted on these and thicker hay sections upon request.

SAUDER TANK COMPANY, INC.

Home Office: EMPORIA, KANSAS