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Proration and Unitization Manager

Amoco Production Company NOV 8 1985

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COLO. OIL & GAS CONS. COMM.

November 4, 1985

William R. Smith, Director (8)  
Oil and Gas Conservation Commission  
Suite 380, 1580 Logan Street  
Denver, CO 80203

File: JDC-567-986.511

Application for Subsurface Commingling  
Twelve Amoco Operated Wells  
Weld County, Colorado

As provided under Rule No. 322, Amoco Production Company herewith requests administrative approval to commingle the Sussex, Shannon, Niobrara and Codell zones in twelve (12) wells we plan to drill in Weld County, Colorado. The names and locations of these wells are shown on Attachment No. 1. Listed on Attachment No. 2 are the names of operators within  $\frac{1}{2}$  mile of these wells and a copy of this application is being furnished by certified mail as required by Rule 322. Attachments 3 and 4 are maps showing the locations of our proposed wells and the locations of all offset wells. Attachment 5 is a diagrammatic sketch of the mechanical installation for the commingled completions.

In order to gain as much reservoir information as possible from these wells it is our plan to delay full commingling of six of the wells for approximately six months following initial Codell-Niobrara completion. This will provide valuable production and pressure decline information from those zones prior to opening the shallower Sussex-Shannon zones for final commingling. The remaining six wells will be commingled from all four zones on initial completion. All of these wells are located near the edge of known commercial production for one or more horizons and full commingling will allow development in those areas which might not otherwise be possible. The early performance of these wells will provide valuable supporting data from which to plan additional development in these fringe areas of Spindle Field.



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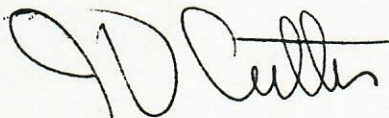
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Codell-Niobrara commingling has previously been authorized for 25 Townships in Weld County by the Commission under Order 407-10. Similarly, downhole commingling of the Sussex-Shannon zones has been authorized by several Commission Orders under Cause 250 for much of Spindle Field. Both of these commingling procedures have proven to be very successful with no evidence of waste or formation damage having been seen after several hundred completions.

We believe commingling of all four of these zones can be equally successfully accomplished. The liquid hydrocarbons produced are of a similar, relatively high gravity composition. The Sussex-Shannon is typically 42° API and the Codell-Niobrara 49° API. We see no reason to expect any problem from mixing these oils within the wellbore. None of the four zones produce water. All produce hydrocarbon gas of a similar quality.

Virgin bottomhole pressures vary widely, however we do not see this as a problem. Typical Sussex-Shannon BHP is 1,500 psi while pressures in the range of 4,200 psi are common in the deeper Codell-Niobrara. On initial completion this could result in a maximum differential of approximately 1,800 psi at Sussex-Shannon depth, before initial production rapidly depletes these pressures near the wellbore. There could be some crossflow into the shallower zones when the wells are shut-in. However, all of these zones have very low natural permeability and any crossflow would be minimal. Since all of these zones are treated with high capacity fracture treatments, return flow would be unrestricted and we would anticipate no reduction in productivity or ultimate recovery. To the contrary, the economic benefits of full commingling will enhance recoveries through additional drilling and extending the economic limit of producing wells.

If no objections are received from offset operators we respectfully request you approve this application.



CJB/dkl

Attachments

LTR307



12 WELL DEVELOPMENT PROJECT

<u>WELL</u>	<u>LOCATION</u>	<u>TYPE OF COMPLETION</u>
<u>Firecracker Area</u>		
Foreman Unit 4	SE SE 12 T1N-R68W	*Delayed Commingle
Foreman Unit 3	NW SE 12 T1N-R68W	Commingle
Graham 2	SE NE 12 T1N-R68W	Commingle
C. E. Wingo 2	NW NE 12 T1N-R68W	*Delayed Commingle
<u>Rocky Mountain Fuel Area</u>		
Rocky Mountain Fuel /C/ 10	NW SW 9 T1N-R67W	*Delayed Commingle
Rocky Mountain Fuel /C/ 12	NW NE 8 T1N-R67W	Commingle
Rocky Mountain Fuel /C/ 11	SE NE 8 T1N-R67W	Commingle
Carl A. Miller /B/ 14	SE SW 5 T1N-R67W	*Delayed Commingle
<u>Gravel Mine Area</u>		
Champlin 86 Amoco /N/ 1	SW SW 29 T2N-R68W	*Delayed Commingle
Milton H. Nelson /H/ 1	SW SE 29 T2N-R68W	*Delayed Commingle
Champlin 86 Amoco /M/ 1	NE SW 29 T2N-R68W	Commingle
Milton H. Nelson /I/ 1	NW NE 29 T2N-R68W	Commingle

\*This well will initially be completed in the Codell and Niobrara, produced for 6 months, and then completed in the Sussex or Sussex and Shannon and all formations commingled.

OTHER OPERATORS WITHIN 1/2 MILE OF COMMINGLED WELLS

<u>OPERATOR</u>	<u>LOCATION</u>	<u>FORMATION</u>
Champlin Petroleum	NE/4 Sec. 7-T1N-R67W	*Undrilled
	NE/4 Sec. 17-T1N-R67W	*Undrilled
	NE Sec. 13-T1N-R68W	*Sussex
Coors Energy Co.	NE Sec. 18-T1N-R67W	J-Sand
Machii-Ross	ALL Sec. 16-T1N-R67W	J-Sand, Sussex Undrilled
Martin Exploration Mgmt. Co.	All Sec. 6-T1N-R67W	Sussex
Martin Oil Service	All Sec. 6-T1N-R67W	J-Sand
Vessels Oil & Gas	N/2 Sec. 18-T1N-R67W	Sussex-Shannon
	NW NW Sec. 28-T2N-R68W	Sussex-Shannon
	N/2 Sec. 28-T2N-R68W	J-Sand
	N/2 Sec. 32-T2N-R68W	Sussex-Shannon
	N/2 Sec. 32-T2N-R68W	J-Sand
H. L. Willett	E/2 NE/4 Sec. 31-T2N-R68W	Undrilled

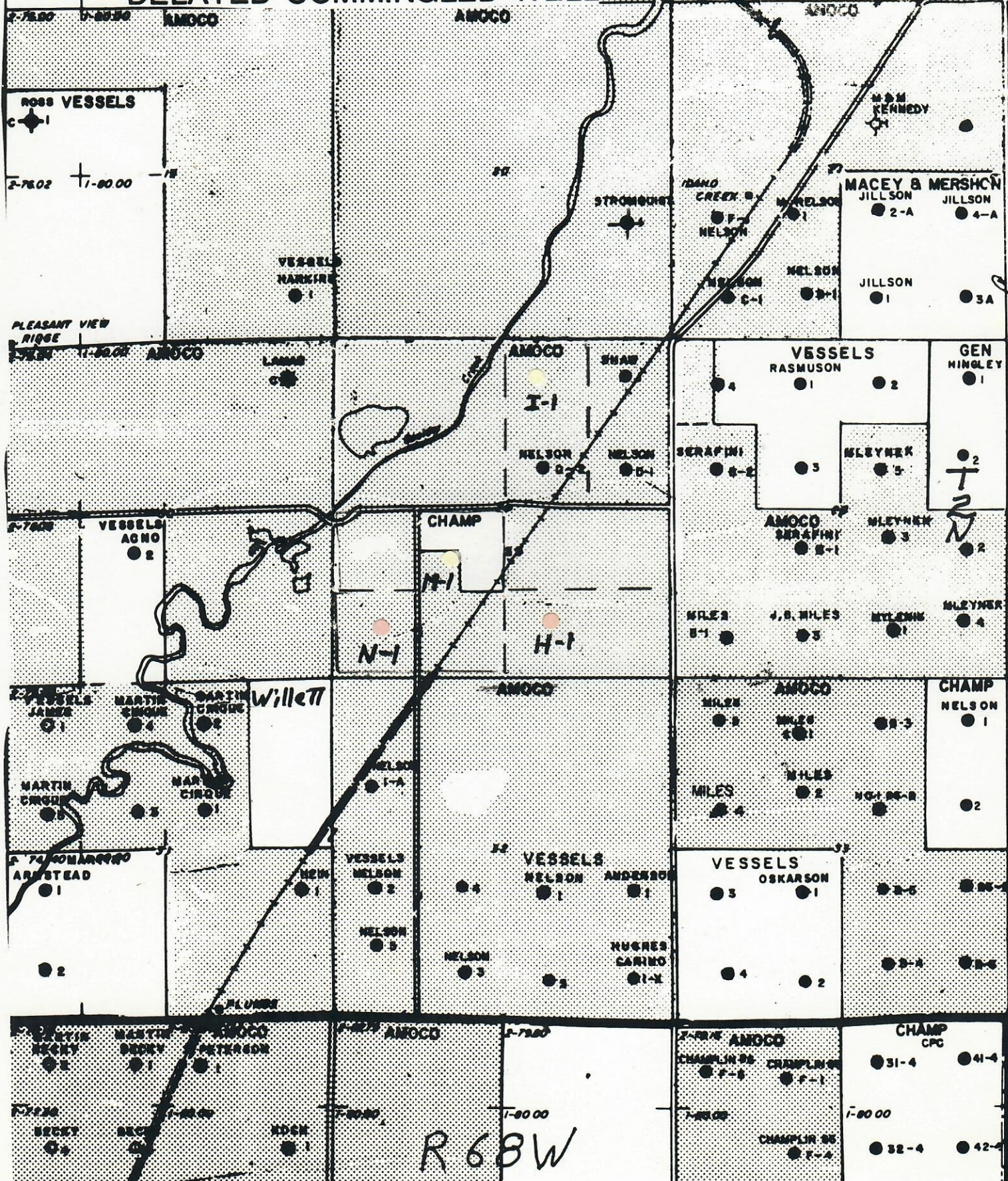
\*APC operated J-Sand unit covering this area.





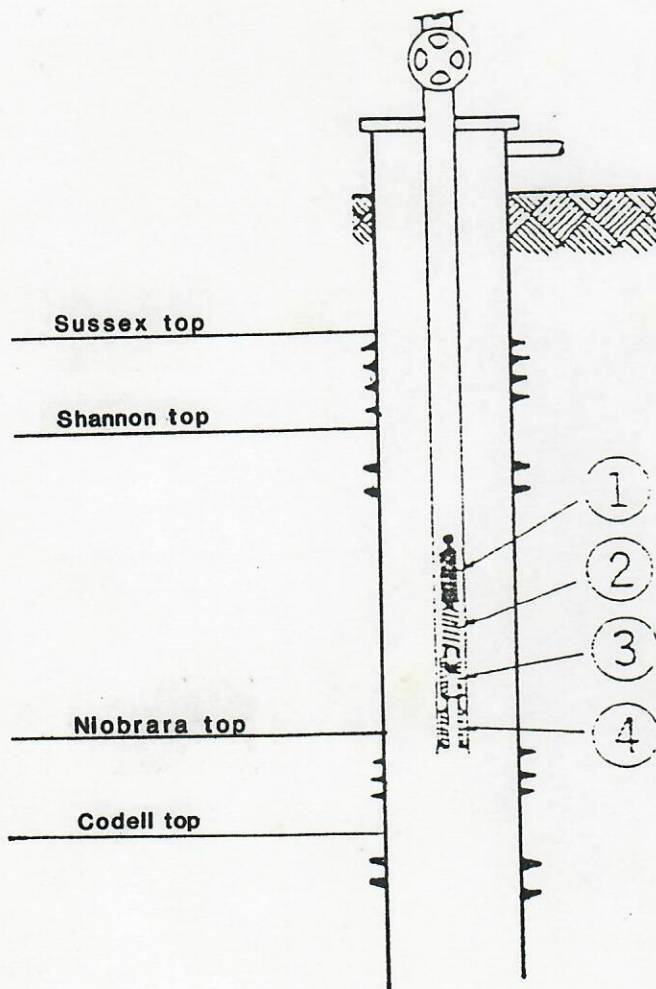


## DELAYED COMMINGLED WELL





SUBSURFACE EQUIPMENT REQUIRED



**EQUIPMENT REQUIRED**

- ① SUBSURFACE PLUNGER
- ② BUMPER SPRING
- ③ RETRIEVABLE STANDING VALVE
- ④ RETRIEVABLE TUBING STOP\*

\*If seating nipple is installed in well, tubing stop may be eliminated.

VERIFICATION AND AFFIDAVIT

STATE OF COLORADO

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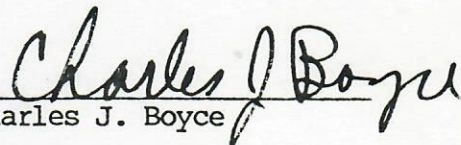
: ss

COUNTY OF DENVER

)

Charles J. Boyce, of lawful age, being first duly sworn on his oath,  
deposes and says:

That he is employed in an engineering capacity by Amoco Production Company in its Denver, Colorado, office; that he has been qualified as an expert engineering witness by the Colorado Oil and Gas Conservation Commission and his qualifications have been made of record; that he has testified numerous times before the Colorado Oil and Gas Conservation Commission; that Amoco's application for administrative approval to commingle the Codell, Niobrara, Sussex and Shannon zones in twelve (12) wells we plan to drill in Weld County, Colorado, was prepared under his direction and supervision; that the matters and things therein set forth are true and correct to the best of his knowledge and beliefs. Copies of the application have been mailed by certified mail to those offset operators listed on the attached sheet.

  
Charles J. Boyce

Subscribed and sworn to before me this 8th day of November, 1985.

  
Notary Public  
1670 Broadway  
Denver, CO 80202

My Commission expires October 14, 1987



Champlin Petroleum  
5800 S. Quebec, Box 1257  
Englewood, CO 80150

Coors Energy Co.  
P.O. Box 467  
Golden, CO 80402-0467

Machii-Ross  
3420 Ocean Park Blvd., Ste 3070  
Santa Monica, CA 90405

Martin Exploration Management Corp.  
2300 Central Ave., Suite A  
Boulder, CO 80301

Martin Oil Company  
2323 Wadsworth Blvd.  
Lakewood, CO 80227

Vessels Oil & Gas Co.  
600 So. Cherry, Suite 1220  
Denver, CO 80222

H. L. Willett  
518 17th St., Suite 250  
Denver, CO 80202