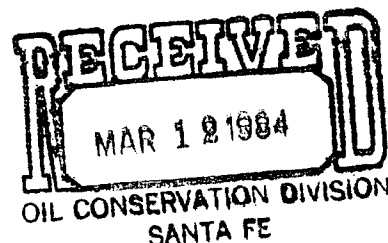




**Southland Royalty Company**

March 9, 1984

Mr. Joe D. Ramey  
New Mexico Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501



RE: Downhole Commingling  
SRC - Calloway #2  
Fruitland/Pictured Cliffs  
NE/4, Section 22, T31N, R11W  
San Juan County, New Mexico

Dear Mr. Ramey:

Southland Royalty Company requests permission to downhole commingle production from the Fruitland and Pictured Cliffs formations in this dual well. The Fruitland formation cannot continuously produce enough gas to lift the oil it produces. With the additional gas from the Pictured Cliffs formation, we feel that the Fruitland oil will be produced with fewer problems.

The gas produced from each zone is similar, and the Fruitland oil produced has no adverse effect on the Pictured Cliffs formation. Bottom hole pressures are similar for the two formations and there will be no crossflow between the zones, therefore no production will be lost.

Production allocation between the two zones was determined from the decline curves and cumulative production from each zone. Proposed allocation is as follows:

Oil Production:	100% Fruitland
Gas Production:	57% Pictured Cliffs 43% Fruitland

Royalty ownership in both zones of the well are identical. The well is currently unproductive and no current 24 hour productivity test can be supplied, therefore, we have included the latest deliverability test reports. In addition, copies of gas analysis from each zone, decline curves, production plats, and miscellaneous data are included with this package for your information.

Mr. Joe D. Ramey  
Page Two  
March 9, 1984

A copy of this application has also been sent to the Bureau of Land Management and all offset operators.

Sincerely,

SOUTHLAND ROYALTY COMPANY

A handwritten signature in dark ink, appearing to read "Doug R. Harris". The signature is fluid and cursive, with the first name "Doug" being more prominent.

Doug R. Harris  
Petroleum Engineer

DRH/eg

Attachments

XC: BLM-Farmington  
EPNG-Farmington

MISCELLANEOUS DATA

Fruitland Bottom Hole Pressure	=	552 psi
Pictured Cliffs Bottom Hole Pressure	=	619 psi
Fruitland Oil Gravity	=	45.2 deg.
BTU/CF @ 14.73/60 F/Dry (Fruitland)		1142.9
BTU/CF @ 14.73/60 F/Dry (Pictured Cliffs)		1150.1



**NEW MEXICO OIL CONSERVATION COMMISSION**  
**WELL DELIVERABILITY TEST REPORT FOR 19 82**

Form C122-A  
 Revised 8-77

POOL NAME <b>BLANCO PC</b>	POOL SLOPE <b>n = .85</b>	FORMATION <b>PICTURED CLIFFS</b>	COUNTY <b>SAN JUAN</b>
-------------------------------	------------------------------	-------------------------------------	---------------------------

COMPANY <b>SOUTHLAND ROYALTY</b>			WELL NAME AND NUMBER <b>CALLAWAY 2 (EPC)</b>		
UNIT LETTER <b>A</b>	SECTION <b>22</b>	TOWNSHIP <b>31N</b>	RANGE <b>11W</b>	PURCHASING PIPELINE <b>SOUTHERN UNION GATHERING</b>	
CASING O.D. - INCHES <b>4.5000</b>	CASING I.D. - INCHES <b>4.0520</b>	SET AT DEPTH - FEET <b>2627</b>	TUBING O.D. - INCHES <b>2.3750</b>	TUBING I.D. - INCHES <b>1.9950</b>	TOP TUBING PERF. - FEET <b>2469</b>
GAS PAY ZONE		WELL PRODUCING THRU		GAS GRAVITY <b>.660</b>	GRAVITY X LENGTH <b>1630</b>
FROM <b>2456</b>	TO <b>2521</b>	CASING	TUBING <b>X</b>		
DATE OF FLOW TEST FROM <b>04/09/82</b> TO <b>04/17/82</b>			DATE SHUT-IN PRESSURE MEASURED <b>04/24/82</b>		

**PRESSURE DATA - ALL PRESSURES IN PSIA**

(a) Flowing Casing Pressure (DWI) <b>00</b>	(b) Flowing Tubing Pressure (DWI) <b>367</b>	(c) Flowing Meter Pressure (DWI) <b>366</b>	(d) Flow Chart Static Reading <b>387</b>	(e) Meter Error (Item c - Item d) <b>21-</b>	(f) Friction Loss (a-c) or (b-c) <b>1+</b>	(g) Average Meter Pressure (Integr.) <b>379</b>
(h) Corrected Meter Pressure (g+e) <b>358</b>	(i) Avg. Wellhead Press: $P_i = (h+f)$ <b>359</b>	(j) Shut-in Casing Pressure (DWI) <b>00</b>	(k) Shut-in Tubing Pressure (DWI) <b>524</b>	(l) $P_c$ = higher value of (i) or (k) <b>524</b>	(m) Del. Pressure: $P_d = 80$ % $P_c$ <b>419</b>	(n) Separator or Dehydrator Pr. (DWI) for critical flow only <b>---</b>

**FLOW RATE CORRECTION (METER ERROR)**

Integrated Volume - MCF/D <b>56</b>	Quotient of: $\frac{\text{Item c}}{\text{Item d}}$ <b>.9457</b>	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$ <b>.9725</b>	Corrected Volume <b>Q = 54 MCF/D</b>
--	--	--	---

**WORKING PRESSURE CALCULATION**

$(1-e^{-3})$ <b>.112</b>	$(F_c Q_m)^2 (1000)$ <b>258</b>	$R^2 = (1-e^{-3}) (F_c Q_m)^2 (1000)$ <b>29</b>	$P_i^2$ <b>128,381</b>	$P_w^2 = P_i^2 + R^2$ <b>USE PT2</b>	$P_w = \sqrt{P_w^2}$ <b>359</b>
-----------------------------	------------------------------------	--	---------------------------	---	------------------------------------

**DELIVERABILITY CALCULATION**

$D = Q \left[ \frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^{\frac{n}{2}}$ <b>54</b>	$\left( \frac{99.015}{145,695} \right)^{\frac{n}{2}} = \left( \frac{.6796}{.7201} \right)^{\frac{n}{2}}$ <b>39 MCF/D</b>
---	---

REMARKS:

**SUMMARY**

Item h **358** Psia  
 $P_c$  **524** Psia  
 $Q$  **54** MCF/D  
 $P_w$  **359** Psia  
 $P_d$  **419** Psia  
 $D$  **39** MCF/D

Company **SOUTHLAND ROYALTY**  
 By **[Signature]**  
 Title **DISTRICT PRODUCTION MANAGER**  
 Witnessed By \_\_\_\_\_  
 Company \_\_\_\_\_

**JUN - 2 1982**

**NEW MEXICO OIL CONSERVATION COMMISSION**  
**WELL DELIVERABILITY TEST REPORT FOR 19 83**

Form C122-A  
 Revised 8-77

POOL NAME <b>UND FRUITLAND</b>	POOL SLOPE n = <b>.85</b>	FORMATION <b>FRUITLAND</b>	COUNTY <b>SAN JUAN</b>
-----------------------------------	------------------------------	-------------------------------	---------------------------

COMPANY <b>SOUTHLAND ROYALTY</b>			WELL NAME AND NUMBER <b>CALLOWAY 2 (FPC)</b>		
UNIT LETTER <b>A</b>	SECTION <b>22</b>	TOWNSHIP <b>31N</b>	RANGE <b>11W</b>	PURCHASING PIPELINE <b>SOUTHERN UNION GATHERING</b>	
CASING O.D. - INCHES <b>4.5000</b>	CASING I.D. - INCHES <b>4.0520</b>	SET AT DEPTH - FEET <b>2627</b>	TUBING O.D. - INCHES <b>2.3750</b>	TUBING I.D. - INCHES <b>1.9950</b>	TOP - TUBING PERF. - FEET <b>2469</b>
GAS PAY ZONE FROM <b>2216</b> TO <b>2318</b>		WELL PRODUCING THRU CASING <b>X</b> TUBING		GAS GRAVITY <b>.648</b>	GRAVITY X LENGTH <b>1436</b>
DATE OF FLOW TEST FROM <b>05/09/83</b> TO <b>05/17/83</b>			DATE SHUT-IN PRESSURE MEASURED <b>05/24/83</b>		

**PRESSURE DATA - ALL PRESSURES IN PSIA**

(a) Flowing Casing Pressure (DWI) <b>463</b>	(b) Flowing Tubing Pressure (DWI) <b>00</b>	(c) Flowing Meter Pressure (DWI) <b>462</b>	(d) Flow Chart Static Reading <b>461</b>	(e) Meter Error (Item c - Item d) <b>1+</b>	(f) Friction Loss (a-c) or (b-c) <b>1+</b>	(g) Average Meter Pressure (Integr.) <b>442</b>
(h) Corrected Meter Pressure (g+e) <b>443</b>	(i) Avg. Wellhead Press. $P_i = (h+f)$ <b>444</b>	(j) Shut-in Casing Pressure (DWI) <b>464</b>	(k) Shut-in Tubing Pressure (DWI) <b>00</b>	(l) $P_c$ = higher value of (i) or (k) <b>464</b>	(m) Del. Pressure $P_d = 80 \times P_c$ <b>371</b>	(n) Separator or Dehydrator Pr. (DWI) for critical flow only _____

**FLOW RATE CORRECTION (METER ERROR)**

Integrated Volume - MCF/D <b>28</b>	Quotient of $\frac{\text{Item c}}{\text{Item d}}$ <b>1.0021</b>	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$ <b>1.0010</b>	Corrected Volume Q = <b>28</b> MCF/D
--	--	---	---

**WORKING PRESSURE CALCULATION**

$(1-e^{-s})$ <b>.099</b>	$(F_c Q_m)^2 (1000)^2$ <b>12</b>	$R^2 = (1-e^{-s}) (F_c Q_m)^2 (1000)^2$ <b>1</b>	$P_i^2$ <b>197,136</b>	$P_w^2 = P_i^2 + R^2$ <b>USE PT2</b>	$P_w = \sqrt{P_w^2}$ <b>444</b>
-----------------------------	-------------------------------------	---	---------------------------	---	------------------------------------

**DELIVERABILITY CALCULATION**

$D = Q \left[ \frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n =$ <b>28</b>	$\left( \frac{77,655}{18,160} \right)^n = \left( 4.2762 \right)^n =$ <b>3.4387</b>	<b>= 96 MCF/D</b>
---	---	-------------------

REMARKS:

**SUMMARY**

Item h 443 Psia  
 $P_c$  464 Psia  
 Q 28 MCF/D  
 $P_w$  444 Psia  
 $P_d$  371 Psia  
 D 96 MCF/D

Company SOUTHLAND ROYALTY  
 By [Signature]  
 Title DISTRICT PRODUCTION MANAGER  
 Witnessed By \_\_\_\_\_  
 Company \_\_\_\_\_

**JUL 13 1983**

SOUTHERN UNION GATHERING COMPANY  
REPORT OF BTU TEST RESULTS

TO: SOUTHLAND ROYALTY CO (826)

REF: CALLOWAY 2 BLPC  
4645  
NORTHWEST NEW MEXICO ( 70)

DATE OF THIS TEST: 4/14/83  
DATE OF LAST TEST: 6/10/82  
TEST FREQUENCY: 12

RESULTS: SPECIFIC GRAVITY: 0.6589  
BTU/CF @ 14.73/60F/DRY: 1150.1

	MOL %	G. P. M.
CARBON DIOXIDE	0.602	0.0000
NITROGEN	0.763	0.0000
METHANE	86.360	0.0000
ETHANE	7.700	2.0590
PROPANE	2.813	0.7740
ISOBUTANE	0.455	0.1480
N-BUTANE	0.667	0.2100
ISOPENTANE	0.226	0.0820
N-PENTANE	0.167	0.0600
HEXANE +	0.271	0.1190
	-----	-----
TOTAL	100.024	3.4520

SOUTHERN UNION GATHERING COMPANY  
REPORT OF BTU TEST RESULTS

TO: SOUTHLAND ROYALTY CO (826)

REF: CALLOWAY 2 UND FRT.  
4646  
NORTHWEST NEW MEXICO ( 70)

DATE OF THIS TEST: 4/14/83  
DATE OF LAST TEST: 2/21/83  
TEST FREQUENCY: 12

RESULTS: SPECIFIC GRAVITY: 0.6463  
BTU/CF @ 14.73/60F/DRY: 1142.9

	MOL %	G. P. M.
CARBON DIOXIDE	0.304	0.0000
NITROGEN	0.456	0.0000
METHANE	88.220	0.0000
ETHANE	6.710	1.7940
PROPANE	2.612	0.7190
ISOBUTANE	0.495	0.1610
N-BUTANE	0.609	0.1910
ISOPENTANE	0.225	0.0820
N-PENTANE	0.142	0.0510
HEXANE +	0.237	0.1040
	-----	-----
TOTAL	100.010	3.1020

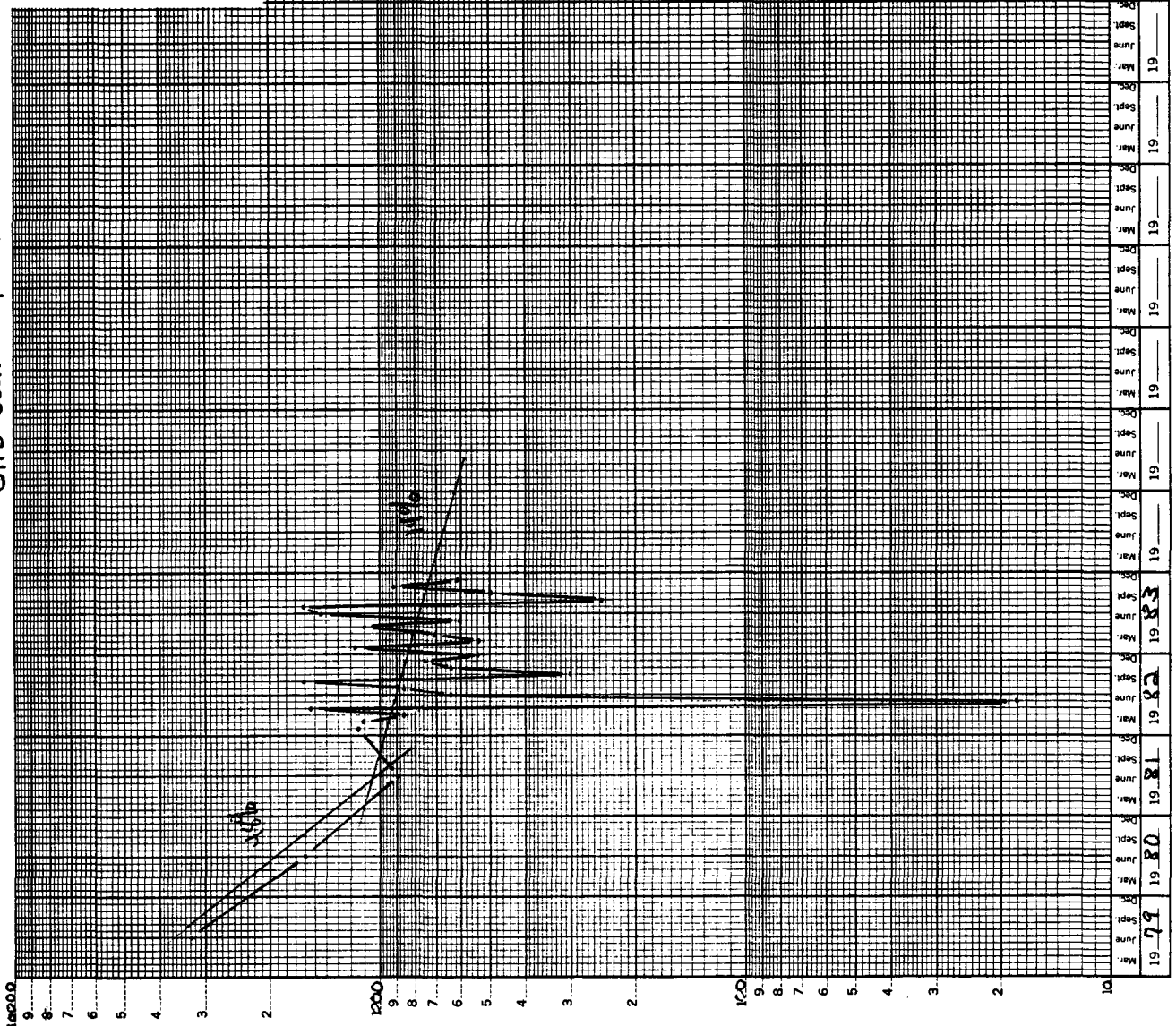




Southland Royalty Company

GAS cum: 66,321

Project Name SOUTHLAND ROYALTY  
Operator CALLOWAY #2  
Lease-Well FRUITLAND  
Zone SAN JUAN UNO  
Field SAN JUAN State NM  
County (A) 22-31N-11W  
Location 1ST PROD: 8-79

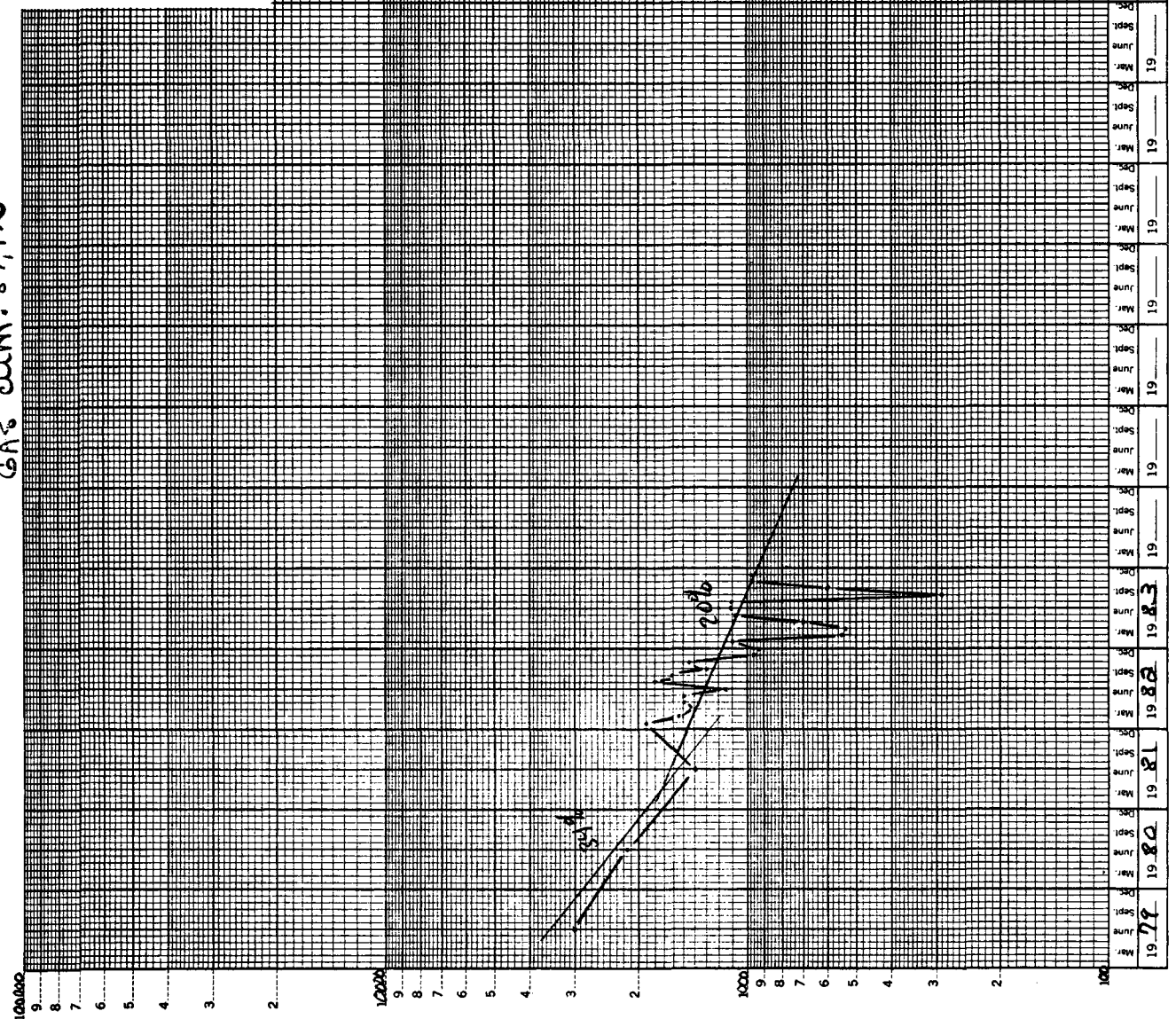




Southland Royalty Company

GAS CUM: 87,173

Project Name \_\_\_\_\_  
Operator SOUTHLAND ROYALTY  
Lease-Well CALLOWAY #2  
Zone PICTURED CHIEFS  
Field BLANCO  
County SAN JUAN State NM  
Location (9) 22-31N-11W  
1ST PROD: 7-79





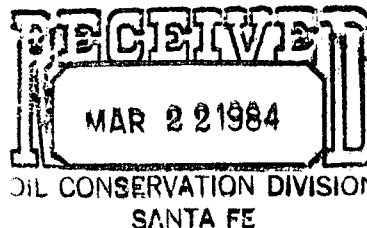
STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD  
AZTEC, NEW MEXICO 87410  
(505) 334-6178

OIL CONSERVATION DIVISION  
BOX 2088  
SANTA FE, NEW MEXICO 87501

DATE March 20, 1984

RE: Proposed MC \_\_\_\_\_  
Proposed DHC α \_\_\_\_\_  
Proposed NSL \_\_\_\_\_  
Proposed SWD \_\_\_\_\_  
Proposed WFX \_\_\_\_\_  
Proposed PMX \_\_\_\_\_



Gentlemen:

I have examined the application dated March 14, 1984  
for the Southland Royalty Calloway #2 A-22-31N-11W  
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Yours truly,

Frank P. [Signature]