

EDUCATION AND EXAMINATION COMMITTEE  
OF THE  
SOCIETY OF ACTUARIES

COURSE 8 RETIREMENT BENEFITS STUDY NOTE

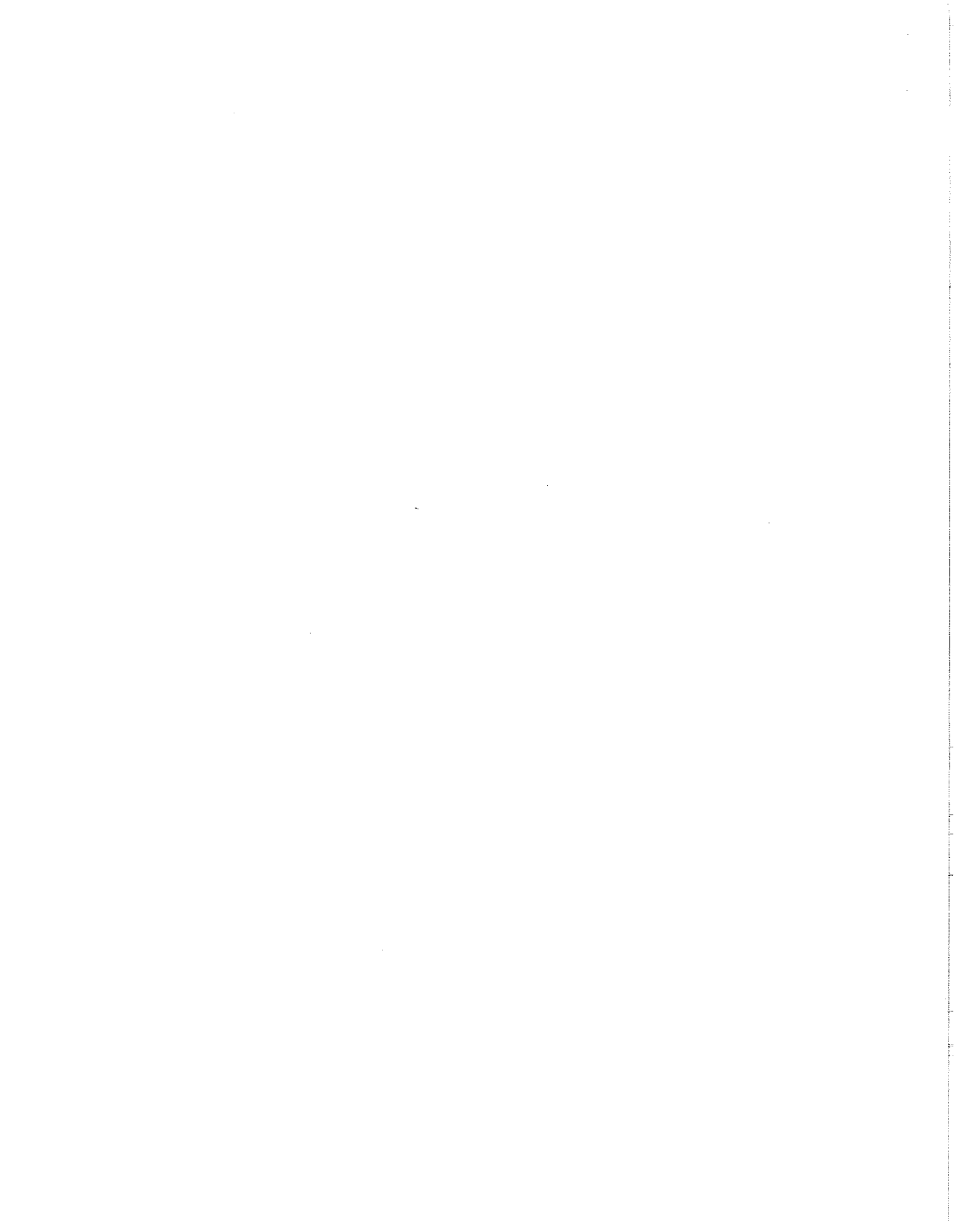
**COURSE 8 RETIREMENT BENEFITS—U.S.  
CASE STUDY**

**REVISED IN 2003**

This case study will be used as a basis for examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to the company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

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## **Case Study - Course 8 Retirement Benefits - U. S.**

### **National Oil Company - Background**

National Oil Company (NOC) is a large well-established company that services oil wells all over the country of Vosne. NOC has been in existence for over 30 years and has more than 10,000 full-time salaried and union hourly employees and up to a further 5,000 non-skilled seasonal employees during the non-winter months. Approximately one-half of the seasonal employees return for another season. The full-time workforce is reasonably stable, but turnover in the last 5 years has been greater than desired, due to competitors recruiting NOC's employees.

Normally, an undergraduate degree is a minimum requirement to obtain entry to the salaried workforce and many employees have graduate degrees. About half of NOC's salaried employees are recruited directly from university with the other half coming from competitors.

The company's financial position varies with the price of oil. As oil prices rise, oil companies become increasingly active and in turn require the services of NOC. Conversely, activity slows as oil prices drop. Despite this, the company is usually in a taxable position.

NOC has managed to be successful by staying on the cutting edge of technology. NOC prides itself in being state of the art in processes and software relevant to its industry. This has helped it to stave off competition from both inside and outside of Vosne. Although NOC is the largest player in the industry within Vosne, there are larger players from outside of the country, with which NOC has to compete. From time to time, there are rumors of a takeover of NOC.

### **Country of Vosne – Background**

Vosne is a modern developed country with a simplified tax system. Both corporations and individuals are subject to income tax at a flat rate of 40%. Reasonable operating expenses, including contributions to Eligible Retirement Plans (ERPs), reduce taxable income.

No pension legislation exists apart from the rules outlined herein.

Rules that apply to gain ERP status are as follows:

### *General*

- if a company has one or more ERPs, then all employees are entitled to be in at least one of the company's ERPs.

### *Defined Benefit Plans (DB ERPs)*

- employer contributions may not exceed those recommended by an actuary, in accordance with generally accepted actuarial practice
- employer contributions are an eligible expense to reduce the employer's taxable income
- periodic pensions may not exceed \$3,000 per annum for each year of service regardless of form or commencement age
- periodic pensions cannot commence prior to age 55
- investment earnings generated by the ERP pension fund are not taxable
- pension payments are taxed as received in the hands of the recipient
- no employee contributions are permitted

### *Defined Contribution Plans (DC ERPs)*

- employer contributions for any individual plan member cannot exceed \$20,000 annually
- employer contributions are an eligible expense to reduce the employer's taxable income
- investment earnings generated by the ERP pension fund are not taxable until withdrawn
- benefit distributions are taxed as received in the hands of the recipient
- no employee contributions are permitted

Vosne's tax system also encourages individuals to save for their retirement through a Personal Pension Account (PPA). The tax rules for PPAs are as follows:

### *Personal Pension Accounts*

- individuals may contribute up to \$20,000 annually to a PPA on a defined contribution basis
- such contributions are tax deductible to the individual
- in addition to the annual contribution limit, individuals may transfer their ERP lump sum termination benefit into their PPA in which case the ERP lump sum is excluded from taxable income until withdrawn from the PPA
- investment earnings on PPAs are not taxable until withdrawn
- withdrawals are subject to tax in the hands of the individual

The tax assistance available under each of the above three arrangements does not depend on the extent of participation under the other two. For example, an individual could participate in a PPA and, if eligible under the plans' rules, also in both a DB ERP and a DC ERP of his or her employer.

### *Supplemental Retirement Plans (SRPs)*

Contributions to a retirement plan that does not meet ERP status are not tax-deductible. Benefits paid to participants under such plans are tax deductible to the company and are taxable to participants, when paid to participants. Such a plan is known as a Supplemental Retirement Plan (SRP). An example of an SRP is a plan that restores the benefits lost by the imposition of the ERP maximums.

### *Retiree Health Care Plans*

Employers in Vosne may provide health care benefits to retirees and their spouses through a separate plan which is not intended to qualify for ERP status. Benefits (including insurance premiums) paid under such plans are tax deductible to the company when paid on behalf of participants. Benefits are not taxable to plan participants at any time.

\* \* \*

No social security pension system exists in Vosne and there are no state-provided life or health-care benefits.

For financial reporting purposes, Vosne adopted FASB Accounting Standards.

The investment market in Vosne is well developed, with substantial trading in government and corporate bonds and equities.

### **Summary of National Oil's Retirement Benefits**

NOC maintains three defined benefit plans:

1. a final-average pay defined benefit (DB) ERP for its full-time salaried employees;
2. a unit benefit DB ERP for its full-time hourly union staff; and
3. a non-eligible pension plan (referred to as the SRP) for its executives that is supplemental to the salaried ERP. This plan has no assets.

In addition, the company has a defined contribution ERP for its seasonal workforce.

Furthermore, full-time salaried and union employees retiring with the company are covered for their lifetime by health benefits.

## **Extracts of Retirement Benefits Provisions and Financial Information**

### *National Oil Full-Time Salaried Pension Plan*

Eligibility	Immediate
Vesting	100% after 5 years of service
Normal Retirement Age	65
Early Retirement Age	55 with 5 years of service
Best Average Earnings	Average annual earnings during 60 consecutive months in which earnings were highest
Earnings	Basic pay, excluding overtime and bonuses
Normal Retirement Benefit	2% of best average earnings times years of service, subject to tax system maximum
Accrued Benefit	Benefit calculated as under the normal retirement benefit formula using best average earnings and service as of date of calculation
Early Retirement Benefit	Accrued benefit reduced by 0.25% per month that early retirement precedes age 62
Form of Benefit	If married, 50% joint & survivor benefit, without reduction. If not married, single life annuity
Optional Forms of Benefit	None
Indexing	None
Termination Benefit	Lump sum equal to actuarial present value of accrued benefit
Pre-Retirement Death Benefit	Lump sum equal to actuarial present value of accrued benefit payable to named beneficiary
Disability Benefit	None

**National Oil Full-Time Salaried Pension Plan**  
*Historical Actuarial Valuation Results*

2000                      2001                      2002                      2003

**Participant Summary - January 1**

<i>Active Participants</i>				
(a) count	4,000	4,110	4,152	4,243
(b) average age	44.6	44.2	44.8	44.9
(c) average service	14.2	14.6	15.0	15.6
(d) average future working lifetime	11.8	12.2	11.6	11.3
(e) average plan earnings (prior year)	58,000	61,500	62,600	64,000
<i>Deferred Vested Participants</i>				
(a) count	-	-	-	-
<i>Pensioners (incl beneficiaries)</i>				
(a) count	525	550	578	590
(b) average age	70.5	71.0	70.9	70.8
(c) average annual benefit	18,700	18,800	19,000	19,100

**Plan Assets (numbers in \$000's) \***

<i>Change in Plan Assets during Prior Year:</i>				
Market Value of Assets at January 1 of prior year	479,906	551,991	565,609	545,745
Employer Contributions during prior year	-	-	-	31,532
Benefit Payments during prior year	(13,118)	(13,640)	(14,280)	(14,660)
Expenses during prior year	-	-	-	-
Investment return during prior year	85,202	27,259	(5,585)	(33,251)
Market Value of Assets at January 1 of current year	551,991	565,609	545,745	529,366
Rate of return during prior year	18%	5%	-1%	-6%
<i>Average Portfolio Mix During Prior Year:</i>				
(a) Domestic Large Cap Equities	36%	35%	33%	27%
(b) Domestic Small Cap Equities	23%	25%	27%	24%
(c) Domestic Fixed Income	24%	25%	26%	34%
(d) International Equities	11%	9%	7%	8%
(e) Real Estate	3%	3%	3%	3%
(f) Cash	3%	3%	4%	4%
(g) Total	100%	100%	100%	100%
<i>Asset Class Returns during Prior Year:</i>				
(a) Domestic Large Cap Equities	17%	4%	-10%	-14%
(b) Domestic Small Cap Equities	32%	7%	4%	-18%
(c) Domestic Fixed Income	9%	10%	8%	9%
(d) International Equities	18%	-10%	-17%	-16%
(e) Real Estate	10%	5%	6%	4%
(f) Cash	3%	3%	4%	2%

\* numbers may not add due to rounding

**National Oil Full-Time Salaried Pension Plan**  
**Historical Actuarial Valuation Results**

	2000	2001	2002	2003
<b>Funding Valuation - January 1 (numbers in \$000's) *</b>				
<b>1 Actuarial Accrued Liability:</b>				
(a) Active participants	368,341	414,306	460,771	502,139
(b) Deferred vested participants	-	-	-	-
(c) Pensioners	82,467	86,856	92,249	98,040
(d) Total	450,808	501,162	553,020	600,179
<b>2 Actuarial Value of Assets</b>	551,991	565,609	545,745	529,366
<b>3 Unfunded Actuarial Accrued Liability: (1d)-(2)</b>	(101,183)	(64,448)	7,275	70,813
<b>4 Normal Cost (beg. Of year)</b>	25,940	28,377	30,718	32,188
<b>5 Change in Unfunded AAL during prior year:</b>				
(a) Unfunded AAL at prior valuation date	(72,756)	(101,183)	(64,448)	7,275
(b) Adjustment for Interest	(5,820)	(8,095)	(5,156)	582
(c) Normal Cost w/interest less contributions	23,133	28,015	30,647	382
(d) (Gain)/Loss on investment	(47,335)	16,355	50,262	77,585
(e) (Gain)/Loss on termination	1,000	500	700	(2,200)
(f) (Gain)/Loss on salary increases less than expected	50	900	(4,000)	(12,800)
(g) (Gain)/Loss on mortality	150	(350)	(220)	200
(h) (Gain)/Loss on retirement	(200)	(400)	(500)	(1,200)
(i) (Gain)/Loss on expenses	-	-	-	-
(j) (Gain)/Loss on all other factors	596	(190)	(11)	988
(k) Unfunded AAL at current valuation date	(101,183)	(64,448)	7,275	70,813
<b>6 Actuarial Basis</b>				
(a) Interest	8.00%	8.00%	8.00%	8.00%
(b) Salary scale	5.00%	5.00%	5.00%	5.00%
(c) Consumer Price Index	3.50%	3.50%	3.50%	3.50%
(d) Mortality		GAM83		
(e) Turnover		Based on NOC experience for 1986-1988		
(f) Retirement age		Age 62		
(g) Proportion married and age difference		80% married, husbands 3 years older than wives		
(h) Expenses		Assume all expenses paid by company		
(i) Asset Valuation Method		Market value of assets		
(j) Actuarial Cost Method		Projected unit credit		

\* numbers may not add due to rounding



**National Oil Full-Time Salaried Pension Plan**  
**Historical Actuarial Valuation Results**

2000                      2001                      2002                      2003

**Expense Valuation - January 1 (numbers in \$000's) \***

<b>1. Reconciliation of funded status at valuation date:</b>				
(a) Accumulated Benefit Obligation	(293,025)	(358,331)	(428,357)	(464,953)
(b) Projected Benefit Obligation	(450,808)	(551,278)	(659,011)	(715,313)
(c) Market Value of Assets	551,991	565,609	545,745	529,366
(d) Surplus: (b) + (c)	101,183	14,332	(113,267)	(185,947)
(e) Unrecognized (gains)/losses	(158,574)	(77,428)	30,660	103,136
(f) Prepaid/(Accrued) expense	(57,392)	(63,097)	(82,607)	(82,811)
<b>2. Pension Expense:</b>				
(a) Service Cost (beg of year)	25,940	31,215	36,862	38,626
(b) Interest Cost	37,615	40,297	44,768	48,530
(c) Expected return on assets	(49,089)	(50,291)	(49,893)	(48,790)
(d) Recognition of prior service cost	-	-	-	-
(e) Amortization of unrecognized (gain)/loss	(8,761)	(1,710)	-	2,797
(f) Pension Expense for year	5,705	19,510	31,736	41,163
<b>3. Actuarial Basis and Supplemental Data</b>				
(a) Discount rate	8.00%	7.00%	6.50%	6.50%
(b) Return on assets	9.00%	9.00%	9.00%	9.00%
(c) Salary scale	5.00%	4.00%	4.00%	4.00%
(d) Consumer Price Index	3.50%	3.50%	3.50%	3.50%
(e) Mortality	GAM83			
(f) Turnover	Based on NOC experience for 1986-1988			
(g) Proportion married and age difference	80% married, husbands 3 years older than wives			
(h) Retirement age	Age 62			
(i) Expenses	Assume all expenses paid by company			
(j) Asset Valuation Method	Market value of assets			
(k) Actuarial Cost Method	Projected unit credit			
(l) Employer contributions	-	-	31,532	40,145
(m) Benefit payments	(13,118)	(13,640)	(14,280)	(14,660)

\* numbers may not add due to rounding

**National Oil Full-Time Salaried Pension Plan  
Reconciliation of Plan Participants (2000-2003)**

	<u>Active</u>	<u>Pensioners/ Beneficiaries</u>	<u>Total</u>
<b>1. Participants as of January 1, 2000</b>	<b>4,000</b>	<b>525</b>	<b>4,525</b>
- New Entrants/Rehires	416	-	416
- Terminated Nonvested	(110)	-	(110)
- Terminated Vested (Lump Sum Cashout)	(165)	-	(165)
- Retirement	(30)	30	-
- Death w/ Beneficiary	(1)	1	-
- Death w/o Beneficiary	-	(6)	(6)
- Net change	110	25	135
<b>2. Participants as of January 1, 2001</b>	<b>4,110</b>	<b>550</b>	<b>4,660</b>
- New Entrants/Rehires	400	-	400
- Terminated Nonvested	(140)	-	(140)
- Terminated Vested (Lump Sum Cashout)	(180)	-	(180)
- Retirement	(35)	35	-
- Death w/ Beneficiary	(3)	3	-
- Death w/o Beneficiary	-	(10)	(10)
- Net change	42	28	70
<b>3. Participants as of January 1, 2002</b>	<b>4,152</b>	<b>578</b>	<b>4,730</b>
- New Entrants/Rehires	345	-	345
- Terminated Nonvested	(75)	-	(75)
- Terminated Vested (Lump Sum Cashout)	(165)	-	(165)
- Retirement	(13)	13	-
- Death w/ Beneficiary	(1)	1	-
- Death w/o Beneficiary	-	(2)	(2)
- Net change	91	12	103
<b>4. Participants as of January 1, 2003</b>	<b>4,243</b>	<b>590</b>	<b>4,833</b>

**National Oil Full-Time Salaried Pension Plan  
Age/Svc/Earnings as of January 1, 2003**

Age (Years)	# Participants	Average Salary	Service (Years)					Totals
			< 5	5-10	10-15	15-20	>20	
< 25	200	34,300	81	-	-	-	-	281
25-35	172	44,500	140	97	6	-	-	415
35-45	214	55,700	255	270	305	220	-	1,264
45-55	125	59,300	175	207	360	730	-	1,597
55-65	85	57,300	40	80	80	360	-	645
> 65	5	45,000	7	12	7	10	-	41
Totals	801	48,616	698	666	758	1,320	-	4,243
			58,100	63,993	71,987	72,599	-	64,000
	Avg Age		44.9					
	Avg Svc		15.6					
	Avg Salary		64,000					

National Oil Full-Time Salaried Supplemental Retirement Plan (SRP)

Eligibility	Immediate
Normal Retirement Age	65
Early Retirement Age	55 with 5 years of service
Accrued Benefit	Accrued Benefit calculated under the provisions of the Salaried Pension Plan without regard to tax system maximums <u>less</u> actual Accrued Benefit under the Salaried Pension Plan
Normal Retirement Benefit	Accrued Benefit
Early Retirement Benefit	Accrued Benefit reduced by 0.25% per month that early retirement preceeds age 62
Commencement Date and Form of Benefit	Must be same as under Salaried Pension Plan
Indexing	None
Termination Benefit	None
Pre-Retirement Death Benefit	None
Disability Benefit	None

Supplemental Retirement Plan  
 Historical Valuation Results - January 1

2000                      2001                      2002                      2003

**Participant Summary**

<b>1. Active Participants</b>				
(a) count	39	41	42	43
(b) average age	49.9	50.5	51.0	51.9
(c) average service	15.4	16.0	16.2	17.0
(d) average future working lifetime	7.9	8.2	7.5	7.5
(e) average earnings (prior year)	286,000	290,000	295,000	300,000
<b>2. Deferred Vested Participants</b>				
(a) count	-	-	-	-
<b>3. Pensioners (incl beneficiaries)</b>				
(a) count	10	11	12	12
(b) average age	66.5	67.0	67.5	68.5
(c) average annual benefit	11,250	11,500	12,000	12,000

**Expense Valuation Results (numbers in \$000's)\***

<b>1. Reconciliation of funded status at valuation date:</b>				
(a) Accumulated Benefit Obligation	(7,404)	(10,642)	(12,704)	(13,695)
(b) Projected Benefit Obligation	(11,943)	(15,736)	(18,784)	(21,151)
(c) Market Value of Assets	-	-	-	-
(d) Surplus: (b) + (c)	(11,943)	(15,736)	(18,784)	(21,151)
(e) Unrecognized prior service costs	-	-	-	-
(f) Unrecognized (gains)/losses	(2,523)	11	1,370	1,862
(g) Prepaid/(Accrued) expense	(14,467)	(15,724)	(17,414)	(19,289)
<b>2. Pension Expense</b>				
(a) Service cost (beg. of year)	544	672	753	804
(b) Interest cost	994	1,144	1,265	1,422
(c) Expected ROA	-	-	-	-
(d) Prior svc cost recognized	-	-	-	-
(e) Amort of unrec (gain)/loss	(168)	-	-	-
(f) Pension Expense for year	1,370	1,816	2,019	2,226
<b>3. Benefit Payments</b>	113	127	144	144
<b>4. Actuarial Basis</b>				
(a) Discount rate	8.00%	7.00%	6.50%	6.50%
(b) Return on assets	9.00%	9.00%	9.00%	9.00%
(c) Salary scale	5.00%	4.00%	4.00%	4.00%
(d) CPI	3.50%	3.50%	3.50%	3.50%
(e) All other assumptions	Same as for Full-time Salaried Pension Plan			

\* numbers may not add due to rounding

National Oil Full-Time Hourly Union Pension Plan

Eligibility	Immediate
Vesting	100% after 5 years of service
Normal Retirement Age	65
Early Retirement Age	55 with 10 years of service
Normal Retirement Benefit	\$65 per month times years of service for terminations/ retirements during 2000  <i>Previously negotiated increases in benefit multiplier:</i>  - \$70 per month for terminations/retirements during 2001  - \$75 per month for terminations/retirements during 2002 and beyond
Accrued Benefit	Benefit calculated as under the normal retirement benefit formula based on service and multiplier as of date of calculation.
Early Retirement Benefit	Unreduced benefit at 62 with 30 years of service, otherwise reduced by 0.25% per month that early retirement precedes Normal Retirement Age.
Form of Benefit	If married, 50% joint & survivor benefit without reduction  If not married, single life annuity.
Optional Forms of Benefit	None
Post-Retirement Indexing	Lesser of 1% or CPI each year after pension commencement
Termination Benefit	Lump sum equal to actuarial present value of accrued benefit assuming no indexing
Pre-Retirement Death Benefit	Lump sum equal to actuarial present value of accrued benefit assuming no indexing, payable to named beneficiary
Disability Benefit	None

**National Oil Full-Time Hourly Union Pension Plan**  
**Historical Actuarial Valuation Results**

2000                      2001                      2002                      2003

**Participant Summary - January 1**

<i>Active Participants</i>				
(a) count	6,200	6,440	6,451	6,437
(b) average age	44.5	44.1	44.4	45.1
(c) average service	14.9	15.3	15.5	16.2
(d) average future working lifetime	12.1	12.4	12.1	11.8
(e) average plan earnings (prior year)	34,300	36,000	36,700	37,100
<i>Deferred Vested Participants</i>				
(a) count	-	-	-	-
<i>Pensioners (incl beneficiaries)</i>				
(a) count	880	920	972	985
(b) average age	69.6	70.3	70.4	71.0
(c) average annual benefit	9,600	9,700	9,800	9,800

**Plan Assets (numbers in \$000's) \***

<i>Change in Plan Assets during Prior Year:</i>				
Market Value of Assets at January 1 of prior year	238,790	275,865	297,614	306,848
Employer Contributions during prior year	10,500	14,500	16,000	19,000
Benefit Payments during prior year	(11,548)	(12,144)	(12,751)	(9,883)
Expenses during prior year	-	-	-	-
Investment return during prior year	38,123	19,393	5,985	(9,342)
Market Value of Assets at January 1 of current year	275,865	297,614	306,848	306,622
Rate of return during prior year	16%	7%	2%	-3%
<i>Average Portfolio Mix During Prior Year:</i>				
(a) Domestic Large Cap Equities	28%	25%	23%	21%
(b) Domestic Small Cap Equities	19%	22%	24%	23%
(c) Domestic Fixed Income	43%	45%	45%	47%
(d) International Equities	6%	4%	2%	2%
(e) Real Estate	2%	2%	2%	2%
(f) Cash	2%	2%	4%	5%
(g) Total	100%	100%	100%	100%
<i>Asset Class Returns during Prior Year:</i>				
(a) Domestic Large Cap Equities	17%	4%	-10%	-14%
(b) Domestic Small Cap Equities	32%	7%	4%	-18%
(c) Domestic Fixed Income	9%	10%	8%	9%
(d) International Equities	18%	-10%	-17%	-16%
(e) Real Estate	10%	5%	6%	4%
(f) Cash	3%	3%	4%	2%

\* numbers may not add due to rounding

**National Oil Full-Time Hourly Union Pension Plan**  
**Historical Actuarial Valuation Results**

2000                      2001                      2002                      2003

**Funding Valuation - January 1 (numbers in \$000's) \***

	\$	65	\$	70	\$	75	\$	75
<b>1. Actuarial Accrued Liability:</b>								
<i>Active Multiplier</i>								
(a) Active participants		201,168		224,065		249,313		281,619
(b) Deferred vested participants		-		-		-		-
(c) Pensioners		81,946		84,778		90,493		91,704
(d) Total		<u>283,114</u>		<u>308,843</u>		<u>339,806</u>		<u>373,323</u>
<b>2 Actuarial Value of Assets</b>		275,865		297,614		306,848		306,622
<b>3 Unfunded Actuarial Accrued Liability (1d)-(2)</b>		7,249		11,229		32,959		66,701
<b>4 Normal Cost (beg Of year)</b>		13,501		14,645		16,085		17,384
<b>5. Change in Unfunded AAL during prior year.</b>								
(a) Unfunded AAL at prior valuation date		(5,177)		7,249		11,229		32,959
(b) Adjustment for interest		(414)		580		898		2,637
(c) Normal Cost w/interest less contributions		705		(499)		(824)		(2,389)
(d) (Gain)/Loss on investment		(19,061)		2,770		17,954		34,255
(e) (Gain)/Loss on termination		15,000		(15,000)		(13,500)		(1,500)
(f) (Gain)/Loss on salary increases less than expected		-		-		-		-
(g) (Gain)/Loss on mortality		150		(100)		200		200
(h) (Gain)/Loss on retirement		(200)		(300)		(250)		(250)
(i) (Gain)/Loss on expenses		-		-		-		-
(j) (Gain)/Loss on all other factors		771		524		630		789
(k) Change in active benefit multiplier		15,474		16,005		16,621		-
(l) Unfunded AAL at current valuation date		<u>7,249</u>		<u>11,229</u>		<u>32,959</u>		<u>66,701</u>
<b>6. Actuarial Basis</b>								
(a) Interest		8.00%		8.00%		8.00%		8.00%
(b) Salary scale								
(c) Consumer Price Index		3.50%		3.50%		3.50%		3.50%
(d) Mortality				GAM83				
(e) Turnover				Based on NOC experience for 1986-1988				
(f) Retirement age				Age 62, with the appropriate early retirement reduction, if any				
(g) Proportion married and age difference				80% married, husbands 3 years older than wives				
(h) Expenses				Assume all expenses paid by company				
(i) Post-retirement indexing		1.00%		1.00%		1.00%		1.00%
(j) Asset Valuation Method				Market value of assets				
(k) Actuarial Cost Method				Unit credit				

\* numbers may not add due to rounding



**National Oil Full-Time Hourly Union Pension Plan**  
**Historical Actuarial Valuation Results**

2000                      2001                      2002                      2003

**Expense Valuation - January 1 (numbers in \$000's) \***

1. Reconciliation of funded status at valuation date:								
(active multiplier)	\$	75	\$	75	\$	75	\$	75
(a) Accumulated Benefit Obligation		(314,063)		(381,339)		(428,174)		(471,564)
(b) Projected Benefit Obligation		(314,063)		(381,339)		(428,174)		(471,564)
(c) Market Value of Assets		275,865		297,614		306,848		306,622
(d) Surplus: (b) + (c)		(38,198)		(83,725)		(121,327)		(164,942)
(e) Unrecognized prior service costs		46,423		42,587		38,750		34,913
(f) Unrecognized (gains)/losses		(17,409)		26,091		60,236		99,623
(g) Prepaid/(Accrued) expense		(9,184)		(15,047)		(22,341)		(30,406)
2. Pension Expense:								
(a) Service Cost (beg. Of year)		15,578		18,829		20,910		22,599
(b) Interest Cost		25,909		27,587		28,776		31,799
(c) Expected return on assets		(24,961)		(26,959)		(27,897)		(28,231)
(d) Recognition of prior service cost		3,837		3,837		3,837		3,837
(e) Amortization of unrecognized (gain)/loss		-		-		1,440		4,446
(f) Pension Expense		20,364		23,294		27,065		34,450
3. Actuarial Basis and Supplemental Data								
(a) Discount rate		8.00%		7.00%		6.50%		6.50%
(b) Return on assets		9.00%		9.00%		9.00%		9.00%
(c) Salary scale								
(d) Consumer Price Index		3.50%		3.50%		3.50%		3.50%
(e) Mortality				GAM83				
(f) Turnover				Based on NOC experience for 1986-1988				
(g) Retirement age				Age 62, with the appropriate early retirement reduction, if any				
(h) Proportion married and age difference				80% married, husbands 3 years older than wives				
(i) Expenses				Assume all expenses paid by company				
(j) Post-retirement indexing		1.00%		1.00%		1.00%		1.00%
(k) Asset Valuation Method				Market value of assets				
(l) Actuarial Cost Method				Projected unit credit				
(m) Employer contributions		14,500		16,000		19,000		24,000
(n) Benefit payments		(11,548)		(12,144)		(12,751)		(9,883)

\* numbers may not add due to rounding

**National Oil Full-Time Hourly Union Pension Plan  
Reconciliation of Plan Participants (2000-2003)**

	<u>Active</u>	<u>Pensioners/ Beneficiaries</u>	<u>Total</u>
<b>1. Participants as of January 1, 2000</b>	<b>6,200</b>	<b>880</b>	<b>7,080</b>
- New Entrants/Rehires	652	-	652
- Terminated Nonvested	(165)	-	(165)
- Terminated Vested (Lump Sum Cashout)	(200)	-	(200)
- Retirement	(45)	45	-
- Death w/ Beneficiary	(2)	2	-
- Death w/o Beneficiary	-	(7)	(7)
- Net change	240	40	280
<b>2. Participants as of January 1, 2001</b>	<b>6,440</b>	<b>920</b>	<b>7,360</b>
- New Entrants/Rehires	500	-	500
- Terminated Nonvested	(185)	-	(185)
- Terminated Vested (Lump Sum Cashout)	(250)	-	(250)
- Retirement	(50)	50	-
- Death w/ Beneficiary	(4)	4	-
- Death w/o Beneficiary	-	(2)	(2)
- Net change	11	52	63
<b>3. Participants as of January 1, 2002</b>	<b>6,451</b>	<b>972</b>	<b>7,423</b>
- New Entrants/Rehires	61	-	61
- Terminated Nonvested	(20)	-	(20)
- Terminated Vested (Lump Sum Cashout)	(23)	-	(23)
- Retirement	(30)	30	-
- Death w/ Beneficiary	(2)	2	-
- Death w/o Beneficiary	-	(19)	(19)
- Net change	(14)	13	(1)
<b>4. Participants as of January 1, 2003</b>	<b>6,437</b>	<b>985</b>	<b>7,422</b>

**National Oil Full-Time Hourly Union Pension Plan  
Age/Svc/Earnings as of January 1, 2003**

Age (Years)	# Participants	Average Salary	Service (Years)					Totals
			< 5	5-10	10-15	15-20	>20	
< 25	260	23,600	55	-	-	-	315	
25-35	313	25,200	140	118	34	-	605	
35-45	355	25,700	417	428	834	312	2,346	
45-55	83	23,500	153	355	710	916	2,217	
55-65	90	23,500	50	60	143	594	937	
> 65	-	19,700	4	6	3	4	17	
Totals			819	967	1,724	1,826	6,437	
Avg Age		45.1	29,935	36,366	41,290	44,272	37,117	
Avg Svc		16.2						
Avg Salary		37,117						

National Oil Part-Time DC Pension Plan

Eligibility	Immediate
Vesting	Immediate
Employer Contributions	90¢ per hour worked
Plan Fund	The employer invests the contributions in GIC's. There are no employee investment choices.
Account Balance	Contributions are accumulated in member's individual account earning interest at the rate of return earned by the Plan Fund.
Loans	Not permitted
Benefit on Termination or Retirement	Account balance is transferred to a PPA for the member after one year from date of termination or retirement, unless employee has since returned to employment with NOC.
Benefit on Death	Account balance is payable to named beneficiary

**National Oil Part-Time DC Pension Plan**  
 Historical Results - January 1

2000                      2001                      2002                      2003

**Participant Summary**

(a) number participating during prior year	5,114	5,650	5,700	5,900
(b) average age	29.9	28.6	29.0	29.5
(c) average hours worked in prior year	1,185	1,250	1,260	1,285
(d) average earnings per hour in prior year	15.00	15.30	15.70	15.75

**Plan Assets (numbers in \$000's) \***

<i>Change in Plan Assets during Prior Year:</i>				
Market Value of Assets at January 1 of prior year	24,347	27,891	31,119	34,191
Employer Contributions during prior year	5,454	6,356	6,464	6,823
Benefit Payments during prior year	(3,677)	(4,285)	(4,358)	(4,600)
Expenses during prior year	-	-	-	-
Investment return during prior year	1,767	1,157	965	353
Market Value of Assets at January 1 of current year	27,891	31,119	34,191	36,767
Rate of return during prior year	7%	4%	3%	1%

\* numbers may not add due to rounding



Retiree Health and Welfare Program  
Historical Valuation Results

2000                      2001                      2002                      2003

**Expense Valuation Results - January 1 (numbers in \$000's) \***

<b>1 Reconciliation of funded status at valuation date:</b>				
(a) Accumulated Postretirement Benefit Obligation				
(i) actives	(215,887)	(348,247)	(384,885)	(421,727)
(ii) retirees	(156,332)	(186,636)	(248,426)	(281,151)
(iii) total	(372,219)	(534,883)	(633,310)	(702,878)
(b) Market Value of Assets	0	0	0	0
(c) Surplus: (a) + (b)	(372,219)	(534,883)	(633,310)	(702,878)
(d) Unrecognized prior service costs	0	0	0	0
(e) Unrecognized (gain)/loss	(168,739)	(26,660)	23,491	37,273
(f) Prepaid/(accrued) expense	(540,958)	(561,543)	(609,819)	(665,604)
<b>2 Expense</b>				
(a) Service cost (beg. of year)	17,526	26,883	31,057	34,411
(b) Interest cost	30,520	38,717	42,603	47,314
(c) Expected ROA	0	0	0	0
(d) Prior svc cost recognized	0	0	0	0
(e) Amort of unrec (gain)/loss	(10,960)	0	0	0
(f) Expense for year	37,086	65,600	73,660	81,726
<b>3. Benefit Payments</b>	16,500	17,325	17,875	18,750
<b>4 Actuarial Basis</b>				
(a) Discount rate	8.00%	7.00%	6.50%	6.50%
(b) Return on assets	9.00%	9.00%	9.00%	9.00%
(c) Medical trend				
Initial rate	6.50%	8.00%	8.00%	8.00%
Annual decrease	0.50%	0.50%	0.50%	0.50%
Ultimate rate	4.50%	4.50%	4.50%	4.50%
Year ultimate trend rate reached	2004	2008	2008	2008
(d) CPI	3.50%	3.50%	3.50%	3.50%
(e) group premium per insured	7,600	7,750	7,850	8,125
(f) demographic assumptions	Same as those used for pension plans			

\* numbers may not add due to rounding

