

**Commodity
Costs and Returns
Estimation
Handbook**

A Report of the AAEA Task Force on Commodity Costs and Returns

July 20, 1998

Ames, Iowa

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Chapter 6 Tables: Commodities Handbook 1998

CCR6-ex

Annual real interest 0.050000
 Annual inflation rate 0.02
 Annual nominal interest 0.071

| | 0 | 1 | 2 | 3 | 4 | 5 |
|--------|---|-----------|-----------|-----------|-----------|-----------|
| Cost | | -300 | | | | |
| Return | | 60 | 80 | 100 | 100 | 70 |
| Cost | | (\$65.99) | (\$65.99) | (\$65.99) | (\$65.99) | (\$65.99) |
| Return | | \$81.58 | \$81.58 | \$81.58 | \$81.58 | \$81.58 |

| | |
|-------------|--------------|
| PV 0 Cost | -285.7142857 |
| PV 0 Return | 353.2060544 |
| PV 1 Cost | -300 |
| PV 1 Return | 370.8663571 |

| | | |
|----------------|------------|-----------|
| Annuity Cost | (\$65.99) | (\$65.99) |
| Annuity Return | \$81.58 | |
| NPV | \$15.59 | |
| NPV 1 | 15.9006756 | |

| | |
|-------------|--------------|
| PV 0 Cost | -285.7142857 |
| PV 0 Return | 353.2060544 |
| PV 1 Cost | -300 |
| PV 1 Return | 370.8663571 |

| | 0 | 1 | 2 | 3 | 4 | 5 |
|--------------|---|-----------|-----------|-----------|-----------|-----------|
| Cost | | -306 | 0 | | | |
| Return | | 61.2 | 83.232 | 106.1208 | 108.2432 | 77.28566 |
| Cost (A) | | (\$69.87) | (\$69.87) | (\$69.87) | (\$69.87) | (\$69.87) |
| Return (A) | | \$86.37 | \$86.37 | \$86.37 | \$86.37 | \$86.37 |
| Cost * (A) | | (\$67.31) | (\$68.66) | (\$70.03) | (\$71.43) | (\$72.86) |
| Return * (A) | | \$83.21 | \$84.88 | \$86.58 | \$88.31 | \$90.07 |

| | |
|-------------|--------------|
| PV 0 Cost | -285.7142857 |
| PV 0 Return | 353.2060544 |
| PV 1 Cost | -306 |
| PV 1 Return | 378.2836843 |

| | |
|----------------|-----------|
| Annuity Cost | (\$69.87) |
| Annuity Return | \$86.37 |
| NPV | \$16.50 |
| NPV 1 | |

| | |
|-------------|--------------|
| PV 0 Cost | -285.7142857 |
| PV 0 Return | 353.2060544 |
| PV 1 Cost | -306 |
| PV 1 Return | 378.2836843 |

| | |
|-------------|--------------|
| PV 0 Cost | -285.7142857 |
| PV 0 Return | 353.2060544 |
| PV 1 Cost | -306 |

PV 1 Return

378.2836843

| | |
|-------------------------|----------|
| Annual real interest | 0.040000 |
| Annual inflation rate | 0.05 |
| Annual nominal interest | 0.092 |
| Original life of asset | 2100 |
| Salvage life | 100 |
| Life in years | 5 |
| Annual depreciation | 400 |
| Initial price | 50 |
| Midyear maintenance | 0 |

| | |
|----------------|------------|
| Original value | 105000 |
| Salvage value | 6381.40781 |

| | Total | Per Hour |
|--------------|------------|----------|
| Depreication | 19723.7184 | 49.3093 |
| OC | 6030.83581 | 15.0771 |
| Total | 25754.5542 | 64.3864 |

4 Year Life

| | |
|-------------------------|----------|
| Annual real interest | 0.040000 |
| Annual inflation rate | 0.05 |
| Annual nominal interest | 0.092 |
| Original life of asset | 2100 |
| Salvage life | 100 |
| Life in years | 4 |
| Annual depreciation | 500 |
| Initial price | 50 |
| Midyear maintenance | 0 |

| | |
|----------------|------------|
| Original value | 105000 |
| Salvage value | 6077.53125 |

| | Total | Per Hour |
|--------------|------------|----------|
| Depreication | 24730.6172 | 49.461 |
| OC | 6247.17483 | 12.494 |
| Total Cost | 30977.792 | 61.956 |

Trad Real

| | |
|-------------------------|----------|
| Annual real interest | 0.040000 |
| Annual inflation rate | 0 |
| Annual nominal interest | 0.04 |
| Original life of asset | 2100 |
| Salvage life | 100 |
| Life in years | 5 |
| Annual depreciation | 400 |
| Initial price | 50 |
| Midyear maintenance | 0 |

| | |
|----------------|--------|
| Original value | 105000 |
| Salvage value | 5000 |

| | Total | Per Hour |
|--------------|-------|----------|
| Depreication | 20000 | 50.000 |
| OC | 2600 | 6.500 |
| Total Cost | 22600 | 56.500 |

4 Year Life

| | |
|-------------------------|----------|
| Annual real interest | 0.040000 |
| Annual inflation rate | 0 |
| Annual nominal interest | 0.04 |
| Original life of asset | 2100 |
| Salvage life | 100 |
| Life in years | 4 |
| Annual depreciation | 500 |
| Initial price | 50 |
| Midyear maintenance | 0 |

| | |
|----------------|--------|
| Original value | 105000 |
| Salvage value | 5000 |

| | Total | Per Hour |
|--------------|-------|----------|
| Depreication | 25000 | 50.000 |
| OC | 2700 | 5.400 |
| Total Cost | 27700 | 55.400 |

Tab 6.5

| | | Year | Inflation | Nominal i | Depr Factor |
|--|----------|------|-----------|-----------|-------------|
| Annual real interest | 0.040000 | | | | |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 | 0.2000000 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 | 0.2000000 |
| Original value of asset | 105000 | 3 | 0.05 | 0.092 | 0.2000000 |
| Depreciation over time period | 100000 | 4 | 0.05 | 0.092 | 0.2000000 |
| Salvage value of asset | 5000 | 5 | 0.05 | 0.092 | 0.2000000 |
| Life in years | 5 | | | | |
| Depreciation Factor | 2 | | | | |
| Annual straightline depreciation in \$ | 20000 | | | | |
| Annual use | 400 | | | | |

| | | | Per Hour |
|-------|------------|-------------|-----------|
| CSC N | 26072.893 | \$26,072.89 | 65.182232 |
| CSC R | 22662.7113 | \$22,662.71 | 56.656778 |
| CSC M | 23795.8469 | | 59.489617 |

| Item | Beg Value | Direct | OC | Inflation | Interest | Real Depr | Nominal Depr | End Value | Total Cost | |
|--|-----------|--------|----|-----------|----------|-----------|--------------|-----------|------------|-------------------|
| Investment | 105000 | | 0 | 9660 | 5250 | 4410 | 20000 | 21000 | 89250 | 9660 |
| Service reduction + Change in market value | | | | | | | | | | 15750 |
| Total | | | | | | | | | | 25410 |
| CSC N | | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | | 23795.8469 |
| CSC M | | | | | | | | | | 23795.8469 |
| Investment | 89250 | | 0 | 8211 | 4462.5 | 3748.5 | 20000 | 22050 | 71662.5 | 8211 |
| Service reduction + Change in market value | | | | | | | | | | 17587.5 |
| Total | | | | | | | | | | 25798.5 |
| CSC N | | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | | 24985.6393 |
| CSC M | | | | | | | | | | 23795.8469 |
| Investment | 71662.5 | | 0 | 6592.95 | 3583.125 | 3009.825 | 20000 | 23152.5 | 52093.125 | 6592.95 |
| Service reduction + Change in market value | | | | | | | | | | 19569.375 |
| Total | | | | | | | | | | 26162.325 |
| CSC N | | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | | 26234.9212 |
| CSC M | | | | | | | | | | 23795.8469 |

Tab 6.5

| | | | | | | | | | |
|--|------------|---|-----------|-----------|-----------|-------|-----------|-----------|-------------------|
| Investment | 52093.125 | 0 | 4792.5675 | 2604.6563 | 2187.9113 | 20000 | 24310.125 | 30387.656 | 4792.5675 |
| Service reduction + Change in market value | | | | | | | | | 21705.4688 |
| Total | | | | | | | | | 26498.0363 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 27546.6673 |
| CSC M | | | | | | | | | 23795.8469 |
| Investment | 30387.6563 | 0 | 2795.6644 | 1519.3828 | 1276.2816 | 20000 | 25525.631 | 6381.4078 | 2795.66438 |
| Service reduction + Change in market value | | | | | | | | | 24006.2484 |
| Total | | | | | | | | | 26801.9128 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 28924.0007 |
| CSC M | | | | | | | | | 23795.8469 |
| Total 6 year cost | | | | | | | | | 130670.774 |
| Average cost | | | | | | | | | 26134.1548 |
| USO Real | 4.4518223 | | | | | | | | |
| USO Nominal | 3.8695501 | | | | | | | | |
| P.V. of annual costs(1) | | | | | | | | | 110172.278 |
| P.V. of annual costs(0) | | | | | | | | | 100890.364 |
| P.V. of CR N | | | | | | | | | 110172.278 |
| P.V. of CR R | | | | | | | | | 110172.278 |
| P.V. of CR M | | | | | | | | | 100550.509 |

Tab 6.5a

| | | | | |
|-------------------------------|----------|------|-----------|-----------|
| Annual real interest | 0.040000 | Year | Inflation | Nominal i |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 |
| Original value of asset | 105000 | 3 | 0.05 | 0.092 |
| Depreciation over time period | 100000 | 4 | 0.05 | 0.092 |
| Salvage value of asset | 5000 | 5 | 0.05 | 0.092 |
| Life in years | 5 | | | |
| Annual depreciation in \$ | 20000 | | | |
| Annual use | 400 | | | |

| | | | |
|-------|-------------|-------------|------------|
| | | | Per Hour |
| CSC N | 26072.89299 | \$26,072.89 | 65.1822325 |
| CSC R | 22662.71135 | \$22,662.71 | 56.6567784 |
| CSC M | 23795.84692 | | 59.4896173 |

| Item | Beg Value | Direct | OC | Inflation | Interest | End Value | Total Cost |
|--|-----------|--------|----|-----------|----------|-----------|-------------------|
| Investment | 105000 | | 0 | 9660 | 5250 | 89250 | 9660 |
| Service reduction + Change in market value | | | | | | | 15750 |
| Total | | | | | | | 25410 |
| CSC N | | | | | | | 26072.893 |
| CSC R | | | | | | | 23795.8469 |
| CSC M | | | | | | | 23795.8469 |
| Investment | 89250 | | 0 | 8211 | 4462.5 | 71662.5 | 8211 |
| Service reduction + Change in market value | | | | | | | 17587.5 |
| Total | | | | | | | 25798.5 |
| CSC N | | | | | | | 26072.893 |
| CSC R | | | | | | | 24985.6393 |
| CSC M | | | | | | | 23795.8469 |
| Investment | 71662.5 | | 0 | 6592.95 | 3583.125 | 52093.125 | 6592.95 |
| Service reduction + Change in market value | | | | | | | 19569.375 |
| Total | | | | | | | 26162.325 |
| CSC N | | | | | | | 26072.893 |
| CSC R | | | | | | | 26234.9212 |
| CSC M | | | | | | | 23795.8469 |

Tab 6.5a

| | | | | | | | |
|--|-------------|---|------------|------------|------------|------------|-------------------|
| Investment | 52093.125 | 0 | 4792.5675 | 2604.65625 | 2187.91125 | 30387.6563 | 4792.5675 |
| Service reduction + Change in market value | | | | | | | 21705.4688 |
| Total | | | | | | | 26498.0363 |
| CSC N | | | | | | | 26072.893 |
| CSC R | | | | | | | 27546.6673 |
| CSC M | | | | | | | 23795.8469 |
| Investment | 30387.65625 | 0 | 2795.66438 | 1519.38281 | 1276.28156 | 6381.40781 | 2795.66438 |
| Service reduction + Change in market value | | | | | | | 24006.2484 |
| Total | | | | | | | 26801.9128 |
| CSC N | | | | | | | 26072.893 |
| CSC R | | | | | | | 28924.0007 |
| CSC M | | | | | | | 23795.8469 |
| Total 6 year cost | | | | | | | 130670.774 |
| Average cost | | | | | | | 26134.1548 |
| USO Real | 4.451822331 | | | | | | |
| USO Nominal | 3.869550054 | | | | | | |
| P.V. of annual costs(1) | | | | | | | 110172.278 |
| P.V. of annual costs(0) | | | | | | | 100890.364 |
| P.V. of CR N | | | | | | | 110172.278 |
| P.V. of CR R | | | | | | | 110172.278 |
| P.V. of CR M | | | | | | | 100550.509 |

Tab 6.5b

| | | | | |
|--|----------|------|-----------|-----------|
| Annual real interest | 0.040000 | Year | Inflation | Nominal i |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 |
| Original value of asset | 105000 | 3 | 0.05 | 0.092 |
| Depreciation over time period | 100000 | 4 | 0.05 | 0.092 |
| Salvage value of asset | 5000 | 5 | 0.05 | 0.092 |
| Life in years | 5 | | | |
| Depreciation Factor | 2 | | | |
| Annual straightline depreciation in \$ | 20000 | | | |
| Annual use | 400 | | | |

| | | | |
|-------|-----------|-------------|-----------|
| | | | Per Hour |
| CSC N | 24763.955 | \$24,763.95 | 61.909887 |
| CSC R | 22662.711 | \$22,662.71 | 56.656778 |
| CSC M | 23795.847 | | 59.489617 |

| Item | Beg Value | Direct | OC | Inflation | Interest | Real Depr | Nominal Depr | End Value | Total Cost |
|--|-----------|--------|----|-----------|----------|-----------|--------------|-----------|------------------|
| Investment | 105000 | | 0 | 9660 | 5250 | 4410 | 40000 | 42000 | 68250 |
| Service reduction + Change in market value | | | | | | | | | 9660 |
| Total | | | | | | | | | 36750 |
| CSC N | | | | | | | | | 46410 |
| CSC R | | | | | | | | | 24763.955 |
| CSC M | | | | | | | | | 23795.847 |

| | | | | | | | | | |
|--|-------|--|---|------|--------|--------|-------|-------|------------------|
| Investment | 68250 | | 0 | 6279 | 3412.5 | 2866.5 | 20000 | 21000 | 50662.5 |
| Service reduction + Change in market value | | | | | | | | | 6279 |
| Total | | | | | | | | | 17587.5 |
| CSC N | | | | | | | | | 23866.5 |
| CSC R | | | | | | | | | 24763.955 |
| CSC M | | | | | | | | | 24985.639 |

| | | | | | | | | | |
|--|---------|--|---|---------|----------|----------|-------|-------|------------------|
| Investment | 50662.5 | | 0 | 4660.95 | 2533.125 | 2127.825 | 15000 | 15750 | 37445.625 |
| Service reduction + Change in market value | | | | | | | | | 4660.95 |
| Total | | | | | | | | | 13216.875 |
| CSC N | | | | | | | | | 17877.825 |
| CSC R | | | | | | | | | 24763.955 |
| CSC M | | | | | | | | | 26234.921 |

| | | | | | | | | | |
|--|-----------|--|---|-----------|-----------|-----------|-------|-------|------------------|
| Investment | 37445.625 | | 0 | 3444.9975 | 1872.2813 | 1572.7163 | 15000 | 15750 | 23567.906 |
| Service reduction + Change in market value | | | | | | | | | 4660.95 |
| Total | | | | | | | | | 13216.875 |
| CSC N | | | | | | | | | 17322.716 |
| CSC R | | | | | | | | | 24763.955 |
| CSC M | | | | | | | | | 27546.667 |

| | | | | | | | | | |
|--|-----------|--|---|-----------|-----------|-----------|-------|-------|------------------|
| Investment | 23567.906 | | 0 | 2168.2474 | 1178.3953 | 989.85206 | 10000 | 10500 | 14246.302 |
| Service reduction + Change in market value | | | | | | | | | 2168.2474 |
| Total | | | | | | | | | 9321.6047 |
| CSC N | | | | | | | | | 11489.852 |
| CSC R | | | | | | | | | 24763.955 |
| CSC M | | | | | | | | | 28924.001 |

Tab 6.5b

| | | |
|-------------------------|----------|-----------|
| Total 6 year cost | | 116966.89 |
| Average cost | | 23393.379 |
| USO Real | 4.451822 | |
| USO Nominal | 3.86955 | |
| P.V. of annual costs(1) | | 104641.3 |
| P.V. of annual costs(0) | | 95825.362 |
| P.V. of CR N | | 104641.3 |
| P.V. of CR R | | 110172.28 |
| P.V. of CR M | | 100550.51 |

Exhibit 6.1

C1 0.9421
 C2 0.0997
 C3 0.0008
 Years 5

| RV | List Price | Age | Total Hours | Average Hours | Depreciation per Year | RV SL | Depreciation per Year | RV SYD |
|-------|------------|-----|-------------|---------------|-----------------------|---------|-----------------------|----------|
| 70000 | | 0 | 0 | #DIV/0! | | 70000 | | 70000 |
| 47586 | | 1 | 500 | 500 | 7107.800 | 62892.2 | 11846.33 | 58153.67 |
| 43040 | | 2 | 900 | 450 | 7107.800 | 55784.4 | 9477.07 | 48676.6 |
| 39535 | | 3 | 1500 | 500 | 7107.800 | 48676.6 | 7107.80 | 41568.8 |
| 36821 | | 4 | 1900 | 475 | 7107.800 | 41568.8 | 4738.53 | 36830.27 |
| 34461 | | 5 | 2400 | 480 | 7107.800 | 34461 | 2369.27 | 34461 |

Tab 6.5 SY

| | | Year | Inflation | Nominal i | Depr Factor |
|--|----------|------|-----------|-----------|-------------|
| Annual real interest | 0.040000 | | | | |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 | 0.3333333 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 | 0.2666667 |
| Original value of asset | 105000 | 3 | 0.05 | 0.092 | 0.2000000 |
| Depreciation over time period | 100000 | 4 | 0.05 | 0.092 | 0.1333333 |
| Salvage value of asset | 5000 | 5 | 0.05 | 0.092 | 0.0666667 |
| Life in years | 5 | | | | |
| Depreciation Factor | 2 | | | | |
| Annual straightline depreciation in \$ | 20000 | | | | |
| Annual use | 400 | | | | |

| | | | Per Hour |
|-------|-----------|-------------|----------|
| CSC N | 26072.893 | \$26,072.89 | 65.18223 |
| CSC R | 22662.711 | \$22,662.71 | 56.65678 |
| CSC M | 23795.847 | | 59.48962 |

| Item | Beg Value | Direct | OC | Inflation | Interest | Real Depr | Nominal Depr | End Value | Total Cost |
|--|-----------|--------|----|-----------|----------|-----------|--------------|-----------|-------------------|
| Investment | 105000 | | 0 | 9660 | 5250 | 4410 | 33333.333 | 75250 | 9660 |
| Service reduction + Change in market value | | | | | | | | | 29750 |
| Total | | | | | | | | | 39410 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 23795.8469 |
| CSC M | | | | | | | | | 23795.8469 |
| Investment | 75250 | | 0 | 6923 | 3762.5 | 3160.5 | 26666.667 | 29400 | 6923 |
| Service reduction + Change in market value | | | | | | | | | 25637.5 |
| Total | | | | | | | | | 32560.5 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 24985.6393 |
| CSC M | | | | | | | | | 23795.8469 |
| Investment | 49612.5 | | 0 | 4564.35 | 2480.625 | 2083.725 | 20000 | 23152.5 | 4564.35 |
| Service reduction + Change in market value | | | | | | | | | 20671.875 |
| Total | | | | | | | | | 25236.225 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 26234.9212 |
| CSC M | | | | | | | | | 23795.8469 |

Tab 6.5 SY

| | | | | | | | | | |
|--|-----------|---|----------|----------|-----------|-----------|-----------|----------|-------------------|
| Investment | 28940.625 | 0 | 2662.538 | 1447.031 | 1215.5063 | 13333.333 | 16206.75 | 14180.91 | 2662.5375 |
| Service reduction + Change in market value | | | | | | | | | 14759.7188 |
| Total | | | | | | | | | 17422.2563 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 27546.6673 |
| CSC M | | | | | | | | | 23795.8469 |
| Investment | 14180.906 | 0 | 1304.643 | 709.0453 | 595.59806 | 6666.6667 | 8508.5438 | 6381.408 | 1304.64338 |
| Service reduction + Change in market value | | | | | | | | | 7799.49844 |
| Total | | | | | | | | | 9104.14181 |
| CSC N | | | | | | | | | 26072.893 |
| CSC R | | | | | | | | | 28924.0007 |
| CSC M | | | | | | | | | 23795.8469 |
| Total 6 year cost | | | | | | | | | 123733.123 |
| Average cost | | | | | | | | | 24746.6246 |
| USO Real | 4.451822 | | | | | | | | |
| USO Nominal | 3.86955 | | | | | | | | |
| P.V. of annual costs(1) | | | | | | | | | 110172.278 |
| P.V. of annual costs(0) | | | | | | | | | 100890.364 |
| P.V. of CR N | | | | | | | | | 110172.278 |
| P.V. of CR R | | | | | | | | | 110172.278 |
| P.V. of CR M | | | | | | | | | 100550.509 |

4 yr life

| | | | | |
|-------------------------------|----------|------|-----------|-----------|
| Annual real interest | 0.040000 | Year | Inflation | Nominal i |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 |
| Original life of asset | 2100 | 3 | 0.05 | 0.092 |
| Depreciation over time period | 2000 | 4 | 0.05 | 0.092 |
| Salvage life | 100 | 5 | 0.05 | 0.092 |
| Life in years | 4 | | | |
| Annual depreciation | 500 | | | |
| Initial price | 50 | | | |
| Midyear maintenance | 0 | | | |

Per Hour

| | | | |
|-------|-----------|-------------|-----------|
| CCR N | 31227.549 | \$31,227.55 | 62.455098 |
| CCR R | 27749.005 | \$27,749.00 | 55.498009 |
| CCR M | 29136.455 | | |

| Item | Price | Quantity | Beg Value | Direct | OC | Inflation | Interest | Price | Quantity | End Value | Total Cost |
|-------------------|-------|----------|-----------|--------|------|-----------|----------|--------|----------|-----------|------------|
| Investment | 50 | 2100 | 105000 | 0 | 9660 | 5250 | 4410 | 52.5 | 1600 | 84000 | 9660 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 50 | 2100 | | | | | | 52.5 | 1600 | | 25000 |
| Price Change | | | | | | | | | | | -4000 |
| Total | | | | | | | | | | | 30660 |
| CCR N | | | | | | | | | | | 31227.5491 |
| CCR R | | | | | | | | | | | 29136.4548 |
| CCR M | | | | | | | | | | | 29136.4548 |
| Investment | 52.5 | 1600 | 84000 | 0 | 7728 | 4200 | 3528 | 55.125 | 1100 | 60637.5 | 7728 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 52.5 | 1600 | | | | | | 55.125 | 1100 | | 26250 |
| Price Change | | | | | | | | | | | -2887.5 |
| Total | | | | | | | | | | | 31090.5 |
| CCR N | | | | | | | | | | | 31227.5491 |
| CCR R | | | | | | | | | | | 30593.2775 |
| CCR M | | | | | | | | | | | 29136.4548 |

4 yr life

| | | | | | | | | | | | |
|-------------------------|-----------|------|----------|---|----------|---------|--------|---------|-----|-----------|------------|
| Investment | 55.125 | 1100 | 60637.5 | 0 | 5578.65 | 3031.88 | 2546.8 | 57.8813 | 600 | 34728.75 | 5578.65 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 55.125 | 1100 | | | | | | 57.8813 | 600 | | 27562.5 |
| Price Change | | | | | | | | | | | -1653.75 |
| Total | | | | | | | | | | | 31487.4 |
| CCR N | | | | | | | | | | | 31227.5491 |
| CCR R | | | | | | | | | | | 32122.9414 |
| CCR M | | | | | | | | | | | 29136.4548 |
| Investment | 57.88125 | 600 | 34728.75 | 0 | 3195.045 | 1736.44 | 1458.6 | 60.7753 | 100 | 6077.5313 | 3195.045 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 57.88125 | 600 | | | | | | 60.7753 | 100 | | 28940.625 |
| Price Change | | | | | | | | | | | -289.40625 |
| Total | | | | | | | | | | | 31846.2638 |
| CCR N | | | | | | | | | | | 31227.5491 |
| CCR R | | | | | | | | | | | 33729.0884 |
| CCR M | | | | | | | | | | | 29136.4548 |
| Total 5 year cost | | | | | | | | | | | 125084.164 |
| Average cost | | | | | | | | | | | 31271.0409 |
| USO0 | 3.2255487 | | | | | | | | | | |
| USO1 | 3.2255487 | | | | | | | | | | |
| P.V. of annual costs(1) | | | | | | | | | | | 109992.769 |
| P.V. of annual costs(0) | | | | | | | | | | | 100725.979 |
| P.V. 0 | | | | | | | | | | | 100725.979 |
| P.V. of CR N | | | | | | | | | | | 109992.769 |
| P.V. of CR R | | | | | | | | | | | 109992.769 |
| P.V. of CR M | | | | | | | | | | | 102627.309 |
| P.V. of maintenance | | | | | | | | | | | 0 |
| P.V. of C.R. 1 and Mnt. | | | | | | | | | | | 109992.769 |
| P.V. of C.R. 1 and Mnt. | | | | | | | | | | | 109992.769 |
| P.V. of C.R. 2 and Mnt. | | | | | | | | | | | 102627.309 |

Table 2-12

| | | Year | Inflation | Nominal i |
|-------------------------|----------|------------|-----------|-----------|
| Annual real interest | 0.04 | | | |
| Annual inflation rate | 0.05 | 1 | 0.05 | 0.092 |
| Annual nominal interest | 0.092 | 2 | 0.05 | 0.092 |
| Original life of asset | 1500 | 3 | 0.05 | 0.092 |
| Salvage life | 250 | 4 | 0.05 | 0.092 |
| Life in years | 5 | 5 | 0.05 | 0.092 |
| Annual depreciation | 250 | | | |
| Initial price | 20 | | | |
| Midyear maintenance | 0 | | | |
| CCR N | 6690.795 | \$6,690.79 | | |
| CCR R | 5815.678 | \$5,815.68 | | |
| CCR M | 6106.462 | | | |

| Item | Price | Quantity | Actual Value | Direct | OC | Inflation | Interest | Price | Quantity | End Value | Total Cost |
|-------------------|-------|----------|--------------|--------|------|-----------|----------|-------|----------|-----------|-------------|
| Investment | 20 | 1500 | 30000 | 0 | 2760 | 1500 | 1260 | 21 | 1250 | 26250 | 2760 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 20 | 1500 | | | | | | 21 | 1250 | | 5000 |
| Price Change | | | | | | | | | | | -1250 |
| Total | | | | | | | | | | | 6510 |
| CCR N | | | | | | | | | | | 6690.794565 |
| CCR R | | | | | | | | | | | 6106.461729 |
| CCR M | | | | | | | | | | | 6106.461729 |
| Investment | 21 | 1250 | 26250 | 0 | 2415 | 1312.5 | 1102.5 | 22.05 | 1000 | 22050 | 2415 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 21 | 1250 | | | | | | 22.05 | 1000 | | 5250 |
| Price Change | | | | | | | | | | | -1050 |
| Total | | | | | | | | | | | 6615 |
| CCR N | | | | | | | | | | | 6690.794565 |
| CCR R | | | | | | | | | | | 6411.784816 |
| CCR M | | | | | | | | | | | 6106.461729 |

Table 2-12

| | | | | | | | | | | | |
|-------------------------|----------|------|------------|---|----------|---------|----------|-------|-----|-----------|--------------|
| Investment | 22.05 | 1000 | 22050 | 0 | 2028.6 | 1102.5 | 926.1 | 23.15 | 750 | 17364.375 | 2028.6 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 22.05 | 1000 | | | | | | 23.15 | 750 | | 5512.5 |
| Price Change | | | | | | | | | | | -826.875 |
| Total | | | | | | | | | | | 6714.225 |
| CCR N | | | | | | | | | | | 6690.794565 |
| CCR R | | | | | | | | | | | 6732.374056 |
| CCR M | | | | | | | | | | | 6106.461729 |
| Investment | 23.1525 | 750 | 17364.375 | 0 | 1597.523 | 868.219 | 729.3037 | 24.31 | 500 | 12155.063 | 1597.5225 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 23.1525 | 750 | | | | | | 24.31 | 500 | | 5788.125 |
| Price Change | | | | | | | | | | | -578.8125 |
| Total | | | | | | | | | | | 6806.835 |
| CCR N | | | | | | | | | | | 6690.794565 |
| CCR R | | | | | | | | | | | 7068.992759 |
| CCR M | | | | | | | | | | | 6106.461729 |
| Investment | 24.31013 | 500 | 12155.0625 | 0 | 1118.266 | 607.753 | 510.5126 | 25.53 | 250 | 6381.4078 | 1118.26575 |
| Maintenance | | | 0 | 0 | 0 | 0 | 0 | | | | 0 |
| Service reduction | 24.31013 | 500 | | | | | | 25.53 | 250 | | 6077.53125 |
| Price Change | | | | | | | | | | | -303.8765625 |
| Total | | | | | | | | | | | 6891.920438 |
| CCR N | | | | | | | | | | | 6690.794565 |
| CCR R | | | | | | | | | | | 7422.442397 |
| CCR M | | | | | | | | | | | 6106.461729 |
| Total 6 year cost | | | | | | | | | | | 33537.98044 |
| Average cost | | | | | | | | | | | 6707.596088 |
| USO Real | 4.451822 | | | | | | | | | | |
| USO Nominal | 3.86955 | | | | | | | | | | |
| P.V. of annual costs(1) | | | | | | | | | | | 28272.278 |
| P.V. of annual costs(0) | | | | | | | | | | | 25890.36447 |
| P.V. 0 | | | | | | | | | | | 26236.5975 |
| P.V. of CR N | | | | | | | | | | | 28272.278 |
| P.V. of CR R | | | | | | | | | | | 28272.278 |
| P.V. of CR M | | | | | | | | | | | 25803.15117 |
| P.V. of maintenance | | | | | | | | | | | 0 |
| P.V. of C.R. 1 and Mnt. | | | | | | | | | | | 28272.278 |
| P.V. of C.R. 1 and Mnt. | | | | | | | | | | | 28272.278 |
| P.V. of C.R. 2 and Mnt. | | | | | | | | | | | 25803.15117 |