A NATO EXTENDED CONFLICT WITHOUT MIDDLE EAST OIL

Berlyn K. Sutton

Army War College
Carlisle Barracks, Pennsylvania

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It is the purpose of this paper to evaluate the threat of loss of the Middle East petroleum resources to the NATO nations, and to analyze the nature of impact which such a loss would have upon the employment of a given NATO ground and tactical air force in an extended conflict. The reality of the threat, crude oil reserves, crude oil production, refining capacities, refined production, demand for refined production, and NATO force petroleum requirements were examined. Data was gathered by using a literature search,

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through personal interview with a petroleum affiliated official, and by written correspondence with a representative of The Department of Logistics of the US Army Command and General Staff College. It was concluded that a genuine threat to the continued flow of oil out of the Middle East does exist. The impact of this loss would fall upon the nonessential industries and the civilian populace. It was further concluded that there would be ample crude and refined petroleum to maintain production in essential industry, to support the NATO force, and to provide for the necessities of the civilian populace.

USAWC RESEARCH ELEMENT
(Essay)

A NATO EXTENDED CONFLICT WITHOUT MIDDLE EAST OIL

by

Colonel Berlyn K. Sutton
Field Artillery

US Army War College
Carlisle Barracks, Pennsylvania
18 October, 1973

SPECIAL TABLES

A NATO EXTENDED CONFLICT WITHOUT MIDDLE EAST OIL

The question arises as to whether or not there is a genuine threat that Middle East oil resources might somehow be interrupted. Should such an interruption occur, what might be the impact upon NATO? Where and how might the impact be felt? Could NATO adjust and carry on during an extended conflict?

The answers to these and other related questions lie in an analysis of the economic and political situation as it exists in the Middle East today. Other keys are found in a study of the entire petroleum production and consumption process as it relates to NATO requirements. Finally, viable alternatives must be considered.

THE THREAT

There is growing anxiety in the western world that the flow of oil from the Middle East, the life blood of today's commerce, might somehow be interrupted. Past agreements made with the oil producing nations of that part of the world, current events as they are now developing, and known enemy capabilities lend credence to this great concern.

The leaders of the middle eastern nations are rapidly awakening to the power which they possess and are flexing their muscles in manners which a few short months ago were considered only remotely possible. There are assertions that these oil producing nations might use oil as a political tool

to coerce the United States to revise policy toward Israel which would more favor the Arab nations. It remains to be seen whether or not the United States and the western nations can devise means to discourage the use of Middle Eastern oil as a political tool.

There was a time when western oil companies exercised unchallenged control over all facets of oil production in the Middle East. With changing times and forces in the world, and with the arrival of a young and enlightened Arab on the scene, this old arrangement has been changing. Significant actions which have recently taken place serve to illustrate this point.

The advent of "participation" signaled the beginning of the changes which are now taking place in the Middle East. This plan which ultimately concedes up to 51% ownership of oil companies by local governments is now an accepted fact in most oil producing nations of the Middle East. Long range agreements have been consummated which will place legal control of oil production in native hands.[1]

A more recent occurrence in the Middle East, and of far greater significance in all its ramifications, is the action recently taken by Libya which nationalized 51% of the holdings of all major oil companies still operating there.[2] The relative ease with which this flagrant action was accomplished clearly demonstrates the dawn of this new era, and could lead to more such actions. It is greatly feared that agreements on participation might be hastened as another result.

The possible consequences of participation and

nationalization are not hard to imagine. There is no assurance that those in control will allow oil production to grow in keeping with the world wide demand as the middle eastern coffers fill with more wealth than can be imagined.

The possibility of outright seizure of the Middle East cannot be ignored. The Soviet Union, through her actions in recent years, has demonstrated an increasing interest in this region. The strategic importance of this area takes on new dimensions as the Sino-Soviet block contemplates its own future needs, as well as the possible denial of the valuable middle eastern oil resources to the West.

There can now be little doubt that the continued flow of oil from what once was a patronizing constituency in the remote Middle East can no longer be taken for granted. The threat is real, and must be dealt with in an effective manner if an energy crisis of world wide proportions and far reaching consequences is to be avoided.

CRUDE RESERVES

The configuration of world wide crude oil reserves is becoming a matter of ever increasing importance as the energy demands on earth double and redouble at alarming rates. It is bemusing that that the world's largest source of crude oil should lie in one of the most underdeveloped and least energy demanding regions on the globe. The 1969 distribution of proven crude oil reserves for selected key areas of the world is shown in table 1. There have been no discoveries made in

recent years of sufficient magnitude to have any appreciable affect upon the percentages shown.

Location	Percent of proven reserves
Japan	.01
Western Europe	.38
United States	6.73
Middle East	59.34
Sino-Soviet block	13.00
Free world	87.00
NATO nations	9.38

Selected World Crude Oil Reserves, 1969
Table 1 [3]

There are some significant observations to be derived from this table. The United States, Western Europe and Japan collectively contain only 7% of the world's crude reserves but are consuming nearly 70% of refined products, as will later be seen. The only assured crude oil reserves for the NATO nations is reflected in the 9.38% which they themselves contain. This might become an important factor in the event of an extended engagement. The Middle East, with nearly 60% of the world total, is obviously in a commanding position as one views the depleting reserves elsewhere. Such a lead is overwhelming.

There are no short term solutions to the maldistribution of crude reserves. Recent discoveries in Indonesia, Alaska and the North Sea are important but relatively insignificant when compared to an estimated 600 billion barrels of world crude reserves. Exploration and development of US off-shore fields is a long range project which will require years to bring

into production. The same is true of course with the vast quantities of oil shale and tar sand resources found in the United States and Canada. It is estimated that these sources might contain as much oil potential as all the known reserves in the world today. Students of petroleum trends point out that for quite some time now the oil industry has maintained about a ten year supply of proven reserves.[4] This would indicate that perhaps only sufficient exploration is programed to maintain such a margain.

It is apparent that the Middle East presently enjoys a dominant position in crude reserves. It is equally apparent that nothing is likely to change this position in the short run. Should the NATO nations suddenly find themselves dependent on their crude resources alone during an extended conflict, there could be serious problems.

CRUDE PRODUCTION

Of far greater importance to the sudden and unexpected employment of NATO is the matter of crude production. The world wide distribution of crude extraction facilities would have great bearing on the capabilities of given nations and alliances in the event of war. It is to be considered that in some oil producing nations crude production is now being controlled and in some instances reduced as petroleum is coming to be viewed as a finite natural resource. The United States has, through individual state controls, restricted both oil well density and production for some time now.[5]

The 1971 crude production statistics for major regions of the world are shown in table 2.

Area	Bbls/year(millions)	% of world
Western Hemisphere		
United States	3,454	20
Other North America, Central America and Caribbean	674	4
South America	1,689	10
Total	5,817	34
Eastern Hemisphere		
Western Europe	131	1
Middle East	5,979	34
Africa	2,067	12
Asiatic area	581	3
Total	8,758	50
non-Communist world	14,575	84
Sino-Soviet area	3,098	16
Total world	17,673	100
NATO nations	4,066	23

Crude Petroleum Production, 1971
Table 2 [6]

It is seen here that the Middle East maintains a very strong position in crude production with almost one-third of the world total. The NATO nations collectively are producing only 23% of the world total. This falls short of the demand within NATO, and places that group of nations in a crude oil importing position. Much comes from the Mid-East.

NATO dependence upon the crude exports from the Middle East places increasing importance upon the strategic value of the area. Japan and Western Europe, receiving 90% and 50% respectively[7] are particularly dependent upon the Middle East. The United States, while not presently requiring of that region such large amounts, views the Middle East

as a possible source to fill the projected needs of the future. However, there are indications that the United States will move toward the adoption of new energy policies designed to reduce previously anticipated dependance upon the oil resources of the Middle East.

It is seen that the United States possesses nearly 85% of the total NATO crude oil reserves. The current energy crisis has caused a relaxation of production restrictions previously noted, and as a result most oil production facilities in the United States are producing at full capacity now.[8] The projected production of both the North Sea oil fields and the Alaskan slopes will have minor impact as consumption is expected to grow by amounts which will exceed anticipated output. In short, there are no rapid means of increasing crude production in the NATO nations, and there seems to be no controllable resource from which the better than 2.5 billion barrels of Middle East crude oil being imported by the NATO nations might be replaced.

The immediate situation is that the NATO nations are heavily dependent upon Middle East crude oil, and there are no readily available alternative sources. Should this source be interrupted, it is apparent that there would be considerable impact upon the economies of NATO.

REFINING CAPACITY

A most critical step in the total refined oil production process is that of refining capacity. It is in this

important step that nations, regardless of crude reserves and production, can realize an opportunity to grasp control of the petroleum process. The 1969 crude oil refining capacities for the non-Communist world are shown in table 3. Sino-Soviet block figures for that year are not available.

Area	Bbls/year(millions)	% of world
Western Hemisphere		
United States	4,255	30
Other North America, Central America and Caribbean	734	5
South America	1,726	10
Total	6,715	45
Eastern Hemisphere		
Western Europe	4,703	33
Middle East	838	6
Africa	276	2
Asiatic Area	1,796	14
Total	7,613	55
non-Communist world	14,328	100
Sino-Soviet area	not available	
Total world	unknown	
NATO nations	8,940	63

Crude Oil Refining Capacity, 1969

Table 3 [9]

Here it is seen that the developed nations have in fact retained adequate facilities to approximate their demand for refined products. The NATO nations themselves, with 63% of the world total, are in a powerful position relative to the Middle Eastern nations which have only 6% of the world total. The crude producing nations of the Middle East would like very much to gain control of the refining process, and certainly have the necessary capital to do so. The lack of indigenous personnel with the

necessary degree of technological know-how has been an important factor in restricting their progress in this direction. Should the Middle East gain control of refineries with sufficient capacity to handle its own crude production, the rest of the free world would be in a weakened power position indeed. The present balance between the crude production of the Middle East and the refining capacities of the rest of the free world is the best position which the NATO nations can presently hope for.

Refining capacity is a controllable factor in that refineries may be expanded and constructed. However, this process is a time consuming matter requiring on the average of better than two and one-half years from beginning to end. It follows that refining capacities cannot be rapidly increased on short notice.

The NATO nations find themselves in a favorable position relative to the Middle East in the category of refining capacity. In this regard, the loss of the Middle East would have very little impact on the western world or NATO.

REFINED PRODUCTION

The final and decisive step in the refining process is that of refined production, the maximum of which is limited by refining capacity. As recently as 1971 the refineries of the world were operating at only 87.5% of capacity.[10] As a result of the pressing energy crisis of late, this condition has now changed, and refineries are producing at capacity.[11]

Table 4 shows refined production statistics for the year 1971.

Area	Bbls/year(millions)	% of world
Western Hemisphere		
United States	4,423	25
Other North America, Central America and Caribbean	1,051	6
South America	1,409	8
Total	6,883	39
Eastern Hemisphere		
Western Europe	4,714	26
Middle East	881	5
Africa	263	2
Asiatic area	2,264	13
Total	8,122	46
non-Communist world	15,005	85
Sino Soviet area	2,843	15
Total world	17,848	100
NATO nations	9,155	51

Refined Production, 1971
Table 4 [12]

It is seen that the NATO nations hold a dominant position in refined production relative to the Middle East and to the rest of the world. They are , in fact, very nearly self-sufficient in that they are producing about 90% of their own demand for refined products.

The NATO nations find themselves in an advantageous position as regards refined production. Loss of the Middle East refined production would have very little impact upon NATO capabilities.

DEMAND FOR REFINED PRODUCTION

It comes as no great surprise to see that the non-Communist world is demanding 85% of the world production of

refined products. The United States is the leading area in consumption but is closely followed by Western Europe, whose rate of consumption is growing faster than that of the United States.[13] The 1971 demand for refined products is shown in table 5.

Area	Bbls/year(millions)	% of world
Western Hemisphere		
United States	5,555	31
Other North America, Central America and Caribbean	948	5
South America	659	4
Total	7,162	40
Eastern Hemisphere		
Western Europe	4,712	27
Middle East	460	3
Africa	288	2
Asiatic area	2,451	14
Total	7,911	45
non-Communist world	15,073	85
Sino-Soviet area	2,622	15
Total world	17,695	100
NATO nations	10,142	57

Demand for Refined Production, 1971
Table 5 [14]

In comparing refined production with demand, it is noted that most areas of the world are nearly self sufficient in the production of refined products. The notable exceptions are the United States and Western Europe, which is almost synonymous with "NATO". The NATO nations are importing almost one billion barrels of refined products per year, or about 10% of their annual requirement.

The NATO nations are collectively consuming better than ten billion barrels of refined products per year, or 57% of the world total. It has been seen that the NATO nations have

access to crude resources and refining capacities which would permit production of nearly 7.5 billion barrels of refined products per year, even without Middle East crude oil. It is paradoxical that the NATO nations, which consume such large quantities of petroleum in pursuit of their domestic economies, should find in this an asset should there be a military encounter. It will be seen that this huge flow of petroleum within and among the member nations permits the support of a sizeable war effort with minimal demand upon that flow. On the contrary, and with great possible significance, the Sino-Soviet block would be hard pressed to support a similar size force from its much smaller flow of petroleum.

However, there would be great impact upon the consumption of refined products in the NATO nations should the annual supply of better than 2.5 billion barrels of Middle East oil be discontinued. This impact would manifest itself through allocation and rationing of all forms of refined products in the non-essential segment of the various economies.

NATO FORCE PETROLEUM REQUIREMENTS

The current NATO land force, comprised of elements from participating nations, is placed at 1,110,000 men organized into 61 divisions.[15] For the purpose of this study, it is assumed that the NATO force will be rapidly expanded to number 3,200,000 men and will be comprised of all the necessary support forces, both army and air force, to deploy a 61 division force. It is furthur assumed that the multi-nation

force is homogenicus in nature, permitting the use of standard US Army logistical consumption tables for planning purposes.[16]

Through use of the standard theatre slice of 51,955 men,[17] applied to the theatre force of 3,200,000 it is computed that there would be 61 division slices. By application of the 2035 daily short ton Class III requirement per division slice,[18] it is determined that the force as a whole would require 124,135 short tons daily.[19] Converting this to the common unit of measurement used throughout this paper, it is computed that the daily petroleum requirement would be 821,910 barrels.[20] This figure, while quite impressive, is put into proper perspective through the comparisons shown in table 6.

Selected statistic	Bbls/day (thousands)	Force % of
NATO crude production	11,139	7.4
NATO refined production	24,973	3.3
NATO refined demand	27,786	2.6
Free world refined production	41,109	2.0
Free world refined demand	41,116	2.0
NATO refined production minus Middle East crude	20,148	4.1

NATO force, per-cent Class III requirements

Table 6

These figures serve to disclose the magnitude of petroleum production and consumption in the civilian segment of the NATO society as it might relate to the demand by the military force in a rather large scale conflict. The significant figures are those indicating a NATO force requirement of only 3.3% of current NATO refined production, and a 4.1% requirement in the absence of Middle East crude oil for refinery input.

If one might assume continued supply of all crude oil except that from the Middle East, and uninterrupted refinery operation in the NATO camp, the impact of the NATO force petroleum requirement would be relatively slight. It is conceivable that a much larger force could be supported should the situation call for it.

CONCLUSION

It is seen in the foregoing analyses that the great shortcoming among NATO nations is in the crude oil reserve and production capacity. The oil fields in Alaska, the North Sea and Indonesia which once held great hope for the future will now only serve to absorb some of the anticipated growth in demand of the future. The development of alternative resources such as oil shale, and tar sa[illegible]quire time and technologies which will preclude their being a significant factor at the moment. The same is true for other energy sources such as solar, geothermal, breeder reactor, ocean tide and the like. Should an immediate crisis arise, severing the Middle East crude oil supply, there is little which can be done to replace any significant quantity of the loss.

The strength of the NATO nations lies in the fact that they possess great refining capacity. Even though they are net importers of refined products, they are still producing an impressive 10 billion barrels of refined products yearly. Even in the absence of Middle East crude oil, should all other sources remain intact, the NATO nations could produce upwards

of 7.5 billion barrels of refined products annually, which is nearly 20 million barrels per day.

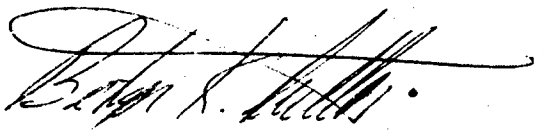
The NATO nations are the largest consumers of refined products on earth. This is seen as an advantage in that it provides a large base of oil flow from which the NATO force might draw for its needs.

It is seen that the Class III requirements for a large military force would represent a rather small per cent of the current NATO refined production. Even with the loss of the Middle East crude supply, the NATO force in itself would demand a relatively small percent of the remaining refined production. There would be ample petroleum to meet the needs of the NATO force, should Middle East crude oil loss be the only negative factor encountered.

Certainly the loss of better than 2.5 billion barrels of irreplaceable crude oil will not go unnoticed. Given the fact that in a show down the military and defense requirements must be given priority, the point of impact must fall upon the non-critical portions of the economy. The individual citizen would feel the affects of petroleum shortages. As a result of rationing of all forms of refined products, he would be required to sacrifice many of the superfluous creature comforts of modern day society.

The NATO nations, with the 7.5 billion barrel productive capability, could meet the needs of essential war industry, provide the necessary petroleum products for Class III support of the military force, and at the same time

provide for the basic needs of its citizens. Priority would be placed upon the matter of national survival. Should the NATO force fail to accomplish the assigned mission, it would not be for lack of necessary petroleum supply.



Berlyn K. Sutton
COL FA USAR

FOOTNOTES

1. "Oil Nations Negotiate Takeover", Washington Post, 6 October 1972, p. A-1.

2. "Libyan Government Decree Orders Oil Firm Takeovers", The Greenville(S. C.) News, 2 September 1973, p. 1.

3. American Petroleum Institute, Petroleum Facts and Figures, p. 544.(hereafter referred to as "Petroleum Facts and Figures").

4. Theodore W. Bauer, Natural and Energy Resources, p. 101.

5. "Petroleum", The World Book Encyclopedia, 1970, Vol. 15, p. 307.

6. Bureau of Mines, International Petroleum Annual, 1971, pp. 3,8,9.(hereafter referred to as "International Petroleum Annual, 1971").

7. US Army War College, Subcourse A-4, Lesson 1, An Appraisal of The Middle East, p. 1.

8. "Arab Oil Cut-Off Could Force Rationing in U. S." The Greenville(S. C.)News, 7 September, 1973, p. 14.

9. Petroleum Facts and Figures, pp. 560-561.

10. International Petroleum Annual, 1971, p. 2.

11. "Arab Oil Cut-Off Could Force Rationing in U. S." The Greenville(S. C.)News, 7 September 1973, p. 14.

12. International Petroleum Annual, 1971, pp. 5,8,9.

13. Ibid, p. 7.

14. Ibid, pp. 7,16,17.

15. International Institute For Strategic Studies, The Military Balance 1972-1973, pp. 88-90.

16. US Department of The Army, FM 101-10-1, July 1971, Ch. V, Sec. VI, pp. 5-122 through 5-135.

17. Ibid, p. 2-6.

18. Ibid, p. 5-127.

19. G. Max Richards, LTC, Department of Logistics, US Army Command and General Staff College, letter to author, 24 September 1973.

20. One short ton = .907 metric tons. One metric ton = 7.3 US barrels. 124,135 x .907 x 7.3 = 821,910 bbls/day.

SELECTED BIBLIOGRAPHY

1. American Petroleum Institute, Petroleum Facts and Figures, 1971 edition, Baltimore, Port City Press, 1971, pp 544, 560-561.

2. An Appraisal of The Middle East, Lesson 4, Subcourse A-4, US Army War College, Carlisle Barracks, Pa., 1972, p 1.

3. " Arab Oil Cut-Off Could Force Rationing in U. S.", The Greenville(S. C.) News, 7 September, 1973, p. 14.

4. Arabian American Oil Co., ARAMCO Handbook: Oil and The Middle East, rev. ed., Dhahran, 1 July, 1968.

5. Bauer, Theodore W., Natural and Energy Resources, Industrial College of The Armed Forces, Washington, 1968, p. 101.

6. Editors of Look, Oil for Victory, New York, McGraw-Hill, 1946.

7. Grosvenor, Melville Bell, ed. National Geographic, Vol. 142, No. 5, November 1972, Washington, 1972, pp 650-681: "The Search for Tomorrows Power" by Kenneth F. Weaver.

8. International Institute for Strategic Studies, Strategic Survey, 1972, London, 1972.

9. International Institute for Strategic Studies, The Military Balance, 1972-1973, London, 1972, pp 88,89,90.

10. International Petroleum Annual, 1971, Washington: US Bureau of Mines, March 1973.

    (A valuable public document containing a wealth of petroleum statistical data from throughout the world.)

11. Kimball, John Clark, Issues in United States Foreign Policy No. 2, NATO and the Defense of Europe, Washington: US Department of State, September, 1969.

12. Laird, Melvin R., National Security Strategy of Realistic Deterrence, Report FY 1973, Washington, US Department of Defense, 1973.

13. "Libyan Government Decree Orders Oil Firm Takeovers", The Greenville(S. C.) News, 6 October, 1972, p.1.

14. Middle East Institute, World Energy Demands and The Middle East, 26th Annual Conference, Washington, 29-30 Sept 72.

15. North Sea Oil-Latest UK Find Caps Banner Year, Washington: Bureau of Intelligence, 29 September 1972.

16. "Oil Nations Negotiate Takeover", Washington Post, 6 October 1972, p. A-1.

17. Organization for Economic Development, Oil Statistics 1971, Paris, 1972.

18. Richards, G. Max, Department of Logistics, US Army Command and General Staff College. Letter to author, 24 September, 1973.

19. Sears, H. T., Vice-President Phillips Fibers, Subsidiary of Phillips Petroleum, Personal Interview, Greenville: 27 September 1973.

20. US Department of The Army, FM 101-10-1, Staff Officers' Field Manual Organizational, Technical and Logistical Data, Unclassified Data, Washington, 26 July 1971.

21. World Book Encyclopedia, Chicago: Field Enterprises Educational Corporation, 1970. Vol. 15, pp. 292-312, "Petroleum".