

THE PRESENT POSITION OF THE WESTERN
AXIS OIL REFINING INDUSTRY
(1 December 1943)

Report by the Joint Intelligence Committee

STATEMENT OF THE PROBLEM

1. To determine the present position of the Western Axis refinery industry after allowance for bomb-damage, demolition, dismantling, and the adverse geographic location of numerous large refineries.

FACTS BEARING ON THE PROBLEM

2. On the basis of a review of the Western Axis oil position made in June of this year (J.I.C. 106), we concluded that, with the progressive completion of certain large synthetic oil plants, the German oil position would become easier, so that toward the end of 1943 supplies might exceed demands sufficiently to permit stocking about 1,500,000 metric tons of petroleum products.

3. Intelligence during the past six months has shown, however, that the completion of synthetic oil plants has proceeded much more slowly than was expected; crude oil production has been less than was foreseen; but consumption has remained at a relatively high level. The Western Axis oil position, therefore, continues to be tight; it seems apparent that very little oil can be added to stocks, which are believed to be close to the distributional minimum.

4. Considered on the basis of their pre-war status, the refineries held by the Western Axis until the invasion of Italy were able to treat about 26,115,000 tons of crude oil annually, whereas the crude oil supply available to them is slightly under 9,000,000 tons per year.

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5. In J.I.C. 106, dated 2 June 1943, it was pointed out that this large excess of refinery capacity over crude oil production resulted in a relatively low evaluation of refineries as vulnerable factors in the Axis oil economy, because damage to any but key plants could readily be offset by shifting operations to some of the unused refineries.

SUMMARY AND CONCLUSIONS

6. We estimate that as a result of bomb-damage, demolition, dismantling and capture, 11,545,000 metric tons of the original 26,115,000 tons of refinery capacity are presently unusable. Of the remaining 14,570,000 tons of refinery capacity, 4,805,000 tons are so unfavorably located from strategic and transportation standpoints that the use of these plants appears equally excluded. A more detailed statement and a statistical breakdown of these figures are provided in the Appendix of this report.

7. After deducting the immobilized capacity noted above, the remaining refineries are sufficient to handle 9,765,000 tons of crude oil per year, and the production of this latter is currently estimated at 8,810,000 tons per year (rate on 1 December 1943). That the resulting excess refinery capacity of 955,000 tons is precariously small is evinced by the fact that the attack on Ploesti alone put out of operation nearly 4,000,000 tons of refining capacity.

8. Because of the current close balance between crude oil production and refining facilities, the Western Axis refinery industry possesses a temporary and exceptional vulnerability in that any destruction of plant over and above the existing surplus of 955,000 tons will be essentially equivalent to a destruction of supplies. Because of the tight stock position, this should directly affect Germany's ability to wage war.

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9. The Germans are aware of the urgent need for increasing the safety margin of refinery capacity over crude oil production, and are actively repairing the existing damage. Until such a margin of strategically located excess refining capacity can be established, however, our previous characterization of refineries as less important for destruction than synthetic oil plants is invalid. Unless advantage is taken of the present vulnerable position, repairs and new construction may suffice to establish an adequate protective margin within the next four to six months.

A P P E N D I X

PRESENT POSITION OF THE REFINING INDUSTRY
IN
GERMAN-HELD EUROPE
(22 November 1943)

Report by the Enemy Oil Committee

10. Whereas German-held Europe had, at the time of our last report, (10 June 1943) a comfortable and fairly well distributed excess of refining capacity, it is now clear that the excess has been reduced to the danger point. The loss of certain Italian refineries, the destruction of certain Italian, German and Rumanian refineries, added to the impotence of the French and Lowlands refineries, has completely changed the outlook. For the first time it is evident that an immediate effective blow at the European refining industry would cause crude oil to be shut back in the wells.

11. The Allied capture of the Naples and Bari refineries represents a permanent loss to the German economy of 450,000 (a)* tons per year of crude handling capacity. The approach of Allied armies and the destruction of crude supply lines by guerrillas is understood now to have immobilized the remaining Italian capacity to the further extent of 1,600,000 (b) tons per year. The damage to Rumanian and German refineries represents a loss, at least for several months, estimated at 3,925,000 (c) tons and 540,000 (d) tons respectively. The destruction of tankage and dismantling of equipment in Northern France and the Lowlands is calculated to represent a loss of 5,030,000 (e) tons. The total actual loss therefore is estimated to have been 11,545,000 (f) tons. In addition it must be noted that, excepting the small plants for local oil, the remaining capacity in France and the Lowlands, 4,085,000 (g) tons, is unavailable due to its remoteness from the centers of production and consumption. Furthermore, of the so-called "capacity" in Germany, 720,000 (h) tons represents simply lube or gasoline finishing capacity which could not be adapted to handling crude. This leaves only

* These letters refer to items in the Annex

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9,765,000 (i) tons, of the original 26,115,000 (j) tons of European refining capacity, now available to the Germans for crude handling.

12. If subjected to no further molestation it is believed that a large part if not all of the damaged refinery equipment in Rumania and Germany could be replaced by the Spring of 1944. Equipment has been removed from French refineries which, with attendant facilities, would be capable of handling several million barrels per year of crude oil. Some of this equipment may be destined for the Lobau refinery, now under construction, or for the rumored new refineries to be built at Komarom and Smederevo. It is even possible that "unknown" plants have been erected with these transplanted facilities, although no intelligence whatsoever has been received to such effect. On the other hand, a large part of it may have been consumed in the construction of the new synthetic plants. In any case, this or newly fabricated equipment could be installed in the presently damaged refineries and a safe margin of excess capacity reestablished by next Spring. It is obvious that the recovery of such a margin, before further raids, would be a matter of first urgency for the Germans.

13. Ignoring the possibility of "unknown" plants it is deemed most probable that for the treatment of the 8,810,000 (k) tons of crude petroleum currently in production, there is refinery capacity in German-held Europe, accessible and operable, totalling 9,765,000 (i) tons per year. This leaves a margin of only 955,000 (l) tons excess capacity which is hardly adequate since it is only 11% of the crude produced. This available excess capacity and the deficit capacity, in thousands of metric tons yearly, is distributed approximately as follows:

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	<u>Excess Crude Cap'y</u>	<u>Deficit Crude Cap'y</u>
Germany	252	Austria 468
Czechoslovakia	668	Hungary 400
Italy	40	Total 868
Yugoslavia	130	
Rumania	228	
Poland	400	
France, Estonia	<u>45</u>	
Total Excess	1,823	
Total Deficit	<u>868</u>	
Net Excess	955	

14. From the above considerations it appears that a successful new attack on the European refining industry would have an excellent chance of valorizing the Ploesti raid. It also appears that the sooner such an attack is made the greater would be the return.

15. NOTES ON REPORT OF REFINING INDUSTRY IN GERMAN-HELD EUROPE -- Nov. 1943

(Figures, in thousands of metric tons per year, are those of the report of 10 June 1943 except as regards present crude production, item k).

(a) <u>Italian loss</u>		(h) <u>Cont'd</u>	
Naples	200	Schliemann-Grasbrook	65
Bari	250	Rhenania Ossag-Grasbrook	130
	<u>450</u>	DPAG-Neuhof	65
		Schindler-Neuhof	40
(b) <u>Italian Immobilization</u>		Deutsche Gasoline-Dollbergen	40
Aquila-Trieste	300	Vacuum-Bremen	80
SIAP-Trieste	150	Schindler-Feine	20
ROMSA-Fiume	150	Niedersachsen-Dollbergen	10
AGIP-Venice	350	Deutsche Gasoline-Emmerich	60
NAFTA-Spezia	400	Ersag-Wintershall-Salzbergen	30
ANIC-Leghorn	250	Schmitz-Dortmund	20
	<u>1,600</u>	Rhenania-Ossag-Monheim	115
			<u>720</u>
(c) <u>Rumanian loss</u>		(i) <u>Residual capacity</u>	
Astra (50%)	900	Total	26,115
Colombia (100%)	535	Lost (item f)	11,545
Concordia (15%)	225		<u>14,570</u>
Credit Minier (100%)	535	Immobilized (item g)	4,085
Orion (30%)	230		<u>10,485</u>
Steaua (100%)	1,500	Immobilized (item h)	720
	<u>3,925</u>		<u>9,765</u>
(d) <u>German loss (assumed)</u>		(j) <u>Original capacity figures</u>	
Rhenania-Harburg (40%)	220	Germany	2,505
Ebano-Harburg (40%)	160	Czechoslovakia	700
Eurotank-Pet 'haven (40%)	160	Austria	800
	<u>540</u>	Hungary	400
(e) <u>French loss</u>		Italy	2,100
Dunkerque	450	Yugoslavia	180
Courchelettes	300	Rumania	9,280
Confreville	1,600	Poland	800
Port Jerome	1,250	Estonia	100
Gravenchon	300	France	7,915
Petit Couronne	750	Lowlands, etc.	1,335
Consomm.-Donges	130		<u>26,115</u>
Pechel.-Donges	250		
	<u>5,030</u>	(k) <u>Crude production rate,</u>	
(f) <u>Total actual loss</u>		<u>Dec. 1, 1943</u>	
Italian loss	450	Germany	993
Italian shutdown	1,600	Czechoslovakia	32
Rumania damage	3,925	Austria	1,268
German damage	540	Hungary	800
French demolition	5,030	Italy	10
	<u>11,545</u>	Yugoslavia	50
(g) <u>N.W. Europe immobilization</u>		Rumania	5,067
Pauillac	500	Poland	400
Bec d'Ambes	350	Estonia	95
Frontignan	300	France	95
Martigues	650		<u>8,810</u>
Berre	550	(l) <u>Excess refining capacity</u>	
L'Avera	400	Available (item i)	9,765
Belgium, Netherlands,		Crude	8,810
Denmark, Norway	1,335	Excess	955
	<u>4,085</u>		
(h) <u>German non-crude cap'y</u>			
Vacuum-Schulau	15		
Albrecht-Grasbrook	30		

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J.I.C. 106/2

14 December 1943

JOINT INTELLIGENCE COMMITTEE

THE PRESENT POSITION OF THE WESTERN AXIS OIL
REFINING INDUSTRY

References: a. J.I.C. 106
b. J.I.C. 106/1
c. Minutes, J.I.C. 81st Meeting,
Item 2.

Note by the Secretary

The attached paper is in the form approved by the Joint Intelligence Committee at its 81st Meeting, 10 December 1943.

This paper, prepared by the Enemy Oil Committee, revises J.I.C. 106/1 by incorporating certain adjustments in the calculations, but does not alter the basic conclusions.

JAMES S. LAY, JR.

Acting Secretary.

THE PRESENT POSITION OF THE WESTERN
AXIS OIL REFINING INDUSTRY
(1 December 1943)

Report by the Joint Intelligence Committee

STATEMENT OF THE PROBLEM

1. To determine the present position of the Western Axis refinery industry after allowance for bomb-damage, demolition, dismantling, and the adverse geographic location of numerous large refineries.

FACTS BEARING ON THE PROBLEM

2. On the basis of a review of the Western Axis oil position made in June of this year (J.I.C. 106), we concluded that, with the progressive completion of certain large synthetic oil plants, the German oil position would become easier, so that toward the end of 1943 supplies might exceed demands sufficiently to permit stocking about 1,500,000 metric tons of petroleum products.

3. Intelligence during the past six months has shown, however, that the completion of synthetic oil plants has proceeded much more slowly than was expected; crude oil production has been less than was foreseen; but consumption has remained at a relatively high level. The Western Axis oil position, therefore, continues to be tight; it seems apparent that very little oil can be added to stocks, which are believed to be close to the distributional minimum.

4. Considered on the basis of their pre-war status, the refineries held by the Western Axis until the invasion of Italy were able to treat about 26,115,000 tons of crude oil annually, whereas the crude oil supply available to them is slightly under 9,000,000 tons per year.

5. In J.I.C. 106, dated 2 June 1943, it was pointed out that this large excess of refinery capacity over crude oil production resulted in a relatively low evaluation of refineries as vulnerable factors in the Axis oil economy, because damage to any but key plants could readily be offset by shifting operations to some of the unused refineries.

SUMMARY AND CONCLUSIONS

6. We estimate that as a result of bomb-damage, demolition, dismantling and capture, 10,415,000 metric tons of the original 26,115,000 tons of refinery capacity are presently unusable. Of the remaining 15,700,000 tons of refinery capacity, 4,085,000 tons are so unfavorably located from strategic and transportation standpoints that the use of these plants appears equally excluded. A more detailed statement and a statistical breakdown of these figures are provided in the Appendix of this report.

7. After deducting the immobilized capacity noted above, the remaining refineries are sufficient to handle 10,895,000 tons of crude oil per year, and the production of this latter is currently estimated at 8,810,000 tons per year (rate on 1 December 1943). That the resulting excess refinery capacity of 2,085,000 tons is precariously small is evinced by the fact that the attack on Ploesti alone put out of operation nearly 4,000,000 tons of refining capacity.

8. Because of the current close balance between crude oil production and refining facilities, the Western Axis refinery industry possesses a temporary and exceptional vulnerability in that any destruction of plant over and above the existing surplus of 2,085,000 tons will be essentially equivalent to a destruction of supplies. Because of the tight stock position, this should directly affect Germany's ability to wage war.

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9. The Germans are aware of the urgent need for increasing the safety margin of refinery capacity over crude oil production, and are actively repairing the existing damage. Until such a margin of strategically located excess refining capacity can be established, however, our previous characterization of refineries as less important for destruction than synthetic oil plants is invalid. Unless prompt advantage is taken of the present vulnerable position, repairs and new construction may suffice to establish an adequate protective margin within the next four to six months.

A P P E N D I XPRESENT POSITION OF THE REFINING INDUSTRYIIGERMAN-HELD EUROPE

(22 November 1943)

Report by the Enemy Oil Committee

10. Whereas German-held Europe had, at the time of our last report, (10 June 1943) a comfortable and fairly well distributed excess of refining capacity, it is now clear that the excess has been reduced to the danger point. The loss of certain Italian refineries, the destruction of certain Italian, German and Rumanian refineries, added to the impotence of the French and Lowlands refineries, has completely changed the outlook. For the first time it is evident that an immediate effective blow at the European refining industry would cause crude oil to be shut back in the wells.

11. The Allied capture of the Naples and Bari refineries represents a permanent loss to the German economy of 450,000 (a)* tons per year of crude handling capacity. The approach of Allied armies and the destruction of crude supply lines by guerrillas is understood now to have immobilized the remaining Italian capacity to the further extent of 1,600,000 (b) tons per year. The damage to Rumanian and German refineries represents a loss, at least for several months, estimated at 2,795,000 (c) tons and 540,000 (d) tons respectively. The destruction of tankage and dismantling of equipment in Northern France and the Lowlands is calculated to represent a loss of 5,030,000 (e) tons. The total actual loss therefore is estimated to have been 10,415,000 (f) tons. In addition it must be noted that, excepting the small plants for local oil, the remaining capacity in France and the Lowlands, 4,085,000 (g) tons, is unavailable due to its remoteness from the centers of production and consumption. Furthermore, of the so-called "capacity" in Germany, 720,000 (h) tons represents simply lube or gasoline finishing capacity which could not be adapted to handling crude. This leaves only

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12. If subjected to no further molestation it is believed that a large part if not all of the damaged refinery equipment in Rumania and Germany could be replaced by the Spring of 1944. Equipment has been removed from French refineries which, with attendant facilities, would be capable of handling several million barrels per year of crude oil. Some of this equipment may be destined for the Lobau refinery, now under construction, or for the rumored new refineries to be built at Komarom and Smederevo. It is even possible that "unknown" plants have been erected with these transplanted facilities, although no intelligence whatsoever has been received to such effect. On the other hand, a large part of it may have been consumed in the construction of the new synthetic plants. In any case, this or newly fabricated equipment could be installed in the presently damaged refineries and a safe margin of excess capacity reestablished by next Spring. It is obvious that the recovery of such a margin, before further raids, would be a matter of first urgency for the Germans.

13. Ignoring the possibility of "unknown" plants it is deemed most probable that for the treatment of the 8,310,000 (k) tons of crude petroleum currently in production, there is refinery capacity in German-held Europe, accessible and operable, totaling 10,895,000 (i) tons per year. This leaves a margin of only 2,085,000 (l) tons excess capacity which is hardly adequate since it is only 24% of the crude produced. This available excess capacity and the deficit capacity, in thousands of metric tons yearly, is distributed approximately as follows:

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	<u>Excess Crude Cap'y</u>	<u>Deficit Crude Cap'y</u>
Germany	252	Austria 468
Czechoslovakia	668	Hungary <u>400</u>
Italy	40	Total 868
Yugoslavia	130	
Rumania	1,358	
Poland	400	
France, Estonia	<u>45</u>	
Total Excess	2,953	
Total Deficit	<u>868</u>	
Net Excess	2,085	

14. From the above considerations it appears that a successful new attack on the European refining industry would have an excellent chance of valorizing the Ploesti raid. It also appears that the sooner such an attack is made the greater would be the return.

15. NOTES ON REPORT OF REFINING INDUSTRY IN GERMAN-HELD EUROPE -- Nov. 1943

(Figures, in thousands of metric tons per year, are those of the report of 10 June 1943 except as regards present crude production, item k).

(a) <u>Italian loss</u>		(h) <u>Cont'd</u>	
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Bari	250	Rhenania Ossag-Grasbrook	130
	450	DPAG-Neuhof	65
		Schindler-Neuhof	40
(b) <u>Italian Immobilization</u>		Deutsche Gasoline-Dollbergen	40
Aquila-Trieste	300	Vacuum-Bremen	80
SIAP-Trieste	150	Schindler-Peine	20
ROMSA-Fiume	150	Niedersachsen-Dollbergen	10
AGIP-Venice	350	Deutsche Gasoline-Emmerich	60
NAFTA-Spezia	400	Ersag-Wintershall-Salzbergen	30
ANIC-Leghorn	250	Schmitz-Dortmund	20
	1,600	Rhenania-Ossag-Monheim	115
			720
(c) <u>Rumanian loss</u>		(i) <u>Residual capacity</u>	
Colombia (100%)	535	Total	26,115
Concordia (15%)	225	Lost (item f)	10,415
Credit Minier (100%)	535		15,700
Steaua (100%)	1,500	Immobilized (item g)	4,085
	2,795		11,615
(d) <u>German loss (assumed)</u>		Immobilized (item h)	720
Rhenania-Harburg (40%)	220		10,895
Ebano-Harburg (40%)	160		
Eurotank-Pet'haven (40%)	160	(j) <u>Original capacity figures</u>	
	540	Germany	2,505
(e) <u>French loss</u>		Czechoslovakia	700
Dunkerque	450	Austria	800
Courchelettes	300	Hungary	400
Gonfreville	1,600	Italy	2,100
Port Jerome	1,250	Yugoslavia	180
Gravenchon	300	Rumania	9,280
Petit Couronne	750	Poland	800
Consoomm.-Donges	130	Estonia	100
Pechel.-Donges	250	France	7,915
	5,030	Lowlands, etc.	1,335
			26,115
(f) <u>Total actual loss</u>		(k) <u>Crude production rate,</u>	
Italian loss	450	Dec. 1, 1943	
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L'Avera	400	Available (item i)	10,895
Belgium, Netherlands,		Crude	8,810
Denmark, Norway	1,335	Excess	2,085
	4,085		
(h) <u>German non-crude cap'y</u>			
Vacuum-Schulau	15		
Albrecht-Grasbrook	30		

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J.I.C. 106/1

8 December 1943

JOINT INTELLIGENCE COMMITTEE

THE PRESENT POSITION OF THE WESTERN AXIS OIL REFINING
INDUSTRY

Reference: J.I.C. 106

Note by the Secretary

The attached paper, which was prepared by the Enemy Oil Committee on its own initiative, is submitted for the consideration of the Committee.

At its 65th Meeting, 4 June 1943, the Committee adopted J.I.C. 106, "The Western Axis Oil Position," which was subsequently forwarded to the Joint Chiefs of Staff. Although the attached paper is not a complete revision of J.I.C. 106, it does materially alter certain of the conclusions reached in that paper, especially as regards the position of the Western Axis oil refining industry.

Attached to this paper, as an appendix, is the Enemy Oil Committee report from which the present summarization has been prepared.

JAMES S. LAY, JR.

Acting Secretary.