

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Assessment of conventionally recoverable petroleum resources
Volga-Urals basin, U.S.S.R.

by

Charles D. Masters and James A. Peterson

Open-File Report 81-1027

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

1981

Assessment of conventionally recoverable petroleum resources
Volga-Urals basin, U.S.S.R.

by

Charles D. Masters and James A. Peterson

PREFACE

The following preliminary report is a product of the World Energy Resources Program of the U.S. Geological Survey (USGS). The program is designed to prepare geologically based resource assessments of the potential petroleum basins of the world. Initial investigations of the program focus on the major petroleum-producing regions of the world with the objective of acquiring a critical, unbiased perspective on the resource potential of a field, a basin, and ultimately a country as a whole. In selected areas, follow-on studies to analyze production potential are conducted by U.S. Department of Energy (DOE) petroleum engineers, and the combined results are incorporated in a report for the Foreign Energy Supply Assessment Program (FESAP) of the DOE and the USGS. This USGS Open-File report includes only the preliminary assessment and some minimal backup data and comments relative to the assessment.

INTRODUCTION

The location of the Volga-Urals basin is shown in figure 1. Unconditional estimates by the USGS of oil and gas resources in this basin are given in table 1 and figures 2 and 3. Data supporting these estimates are supplied in table 2.

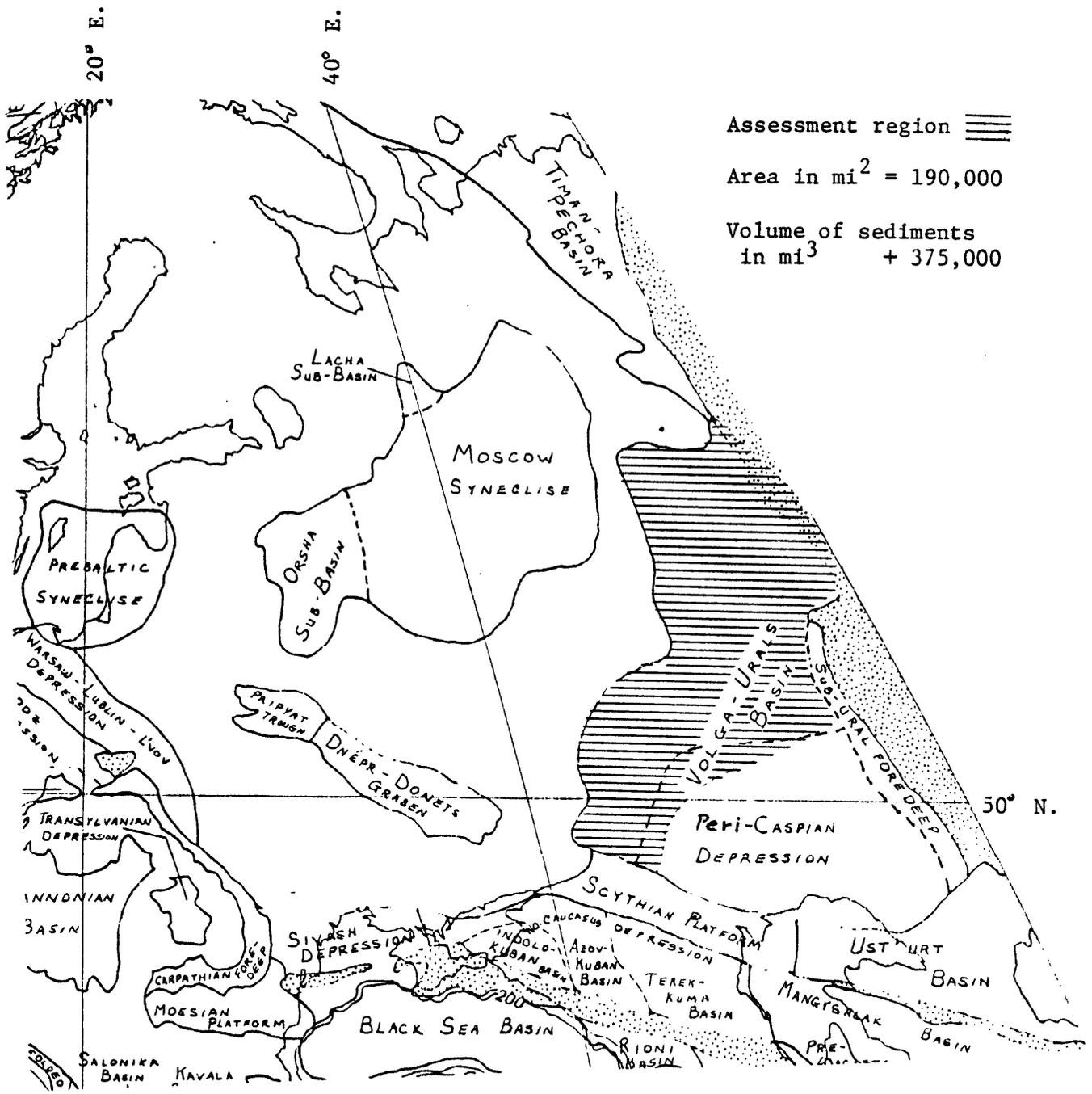


Figure 1.--Location map of Volga-Urals basin assessment region.

From: Map of Prospective Hydrocarbon Provinces of the World, 1978, U.S. Geological Survey Miscellaneous Field Studies Map MF 1044-B.

Explanation

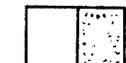
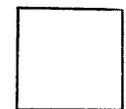
-  Areas containing known oil or gas deposits or which are favorable for their occurrence
-  Subbasin associated with large depocenter
-  Unlabeled and stippled areas judged to be nonprospective for hydrocarbons
-  Scale--25,000 square miles (65,000 square kilometers)

Table 1.--Assessment of conventionally recoverable petroleum resources
Volga-Urals basin, U.S.S.R.

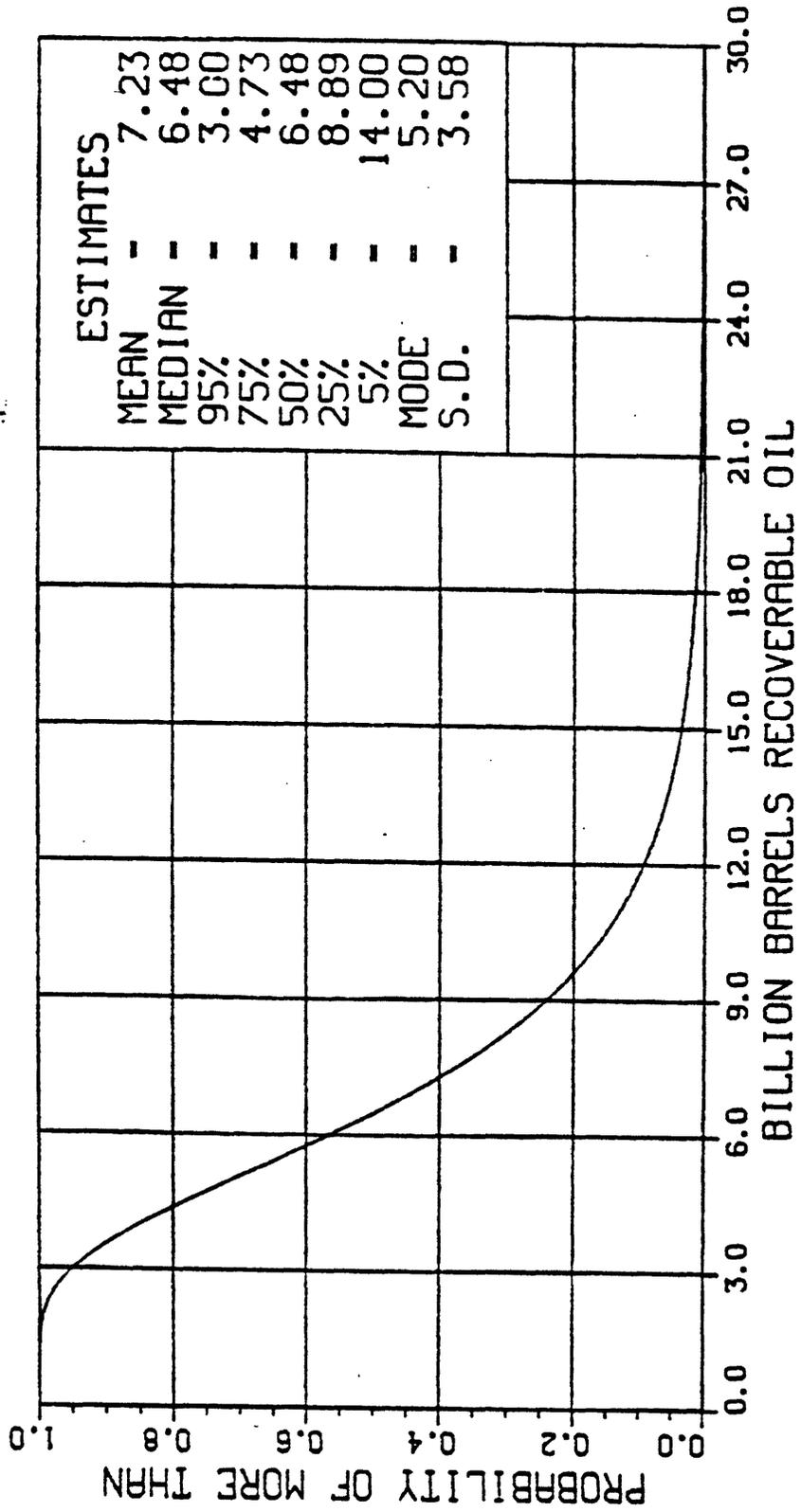
Unconditional resource assessment by USGS as of 4/2/81; see also
figures 2, 3.

Probability of occurrence in %	Crude Oil in Billions of Barrels (BB)			Natural Gas in Trillions of Cubic Feet (Tcf) and Billions of Barrels of Oil Equiv- alent (BBOE) @ 6,000 cuft/bbl.		
	<u>95%</u>	<u>5%</u>	<u>Mean</u>	<u>95%</u>	<u>5%</u>	<u>Mean</u>
Estimate	3	14	7	Tcf 19	142	63
				BBOE 3	24	10

UNCOND

Figure 2.-- VOLGA-URALS RECOVERABLE OIL

Assessment date - 4/2/81



UNCOND

Figure 3.--VOLGA-URALS RECOVERABLE GAS

Assessment date - 4/2/81

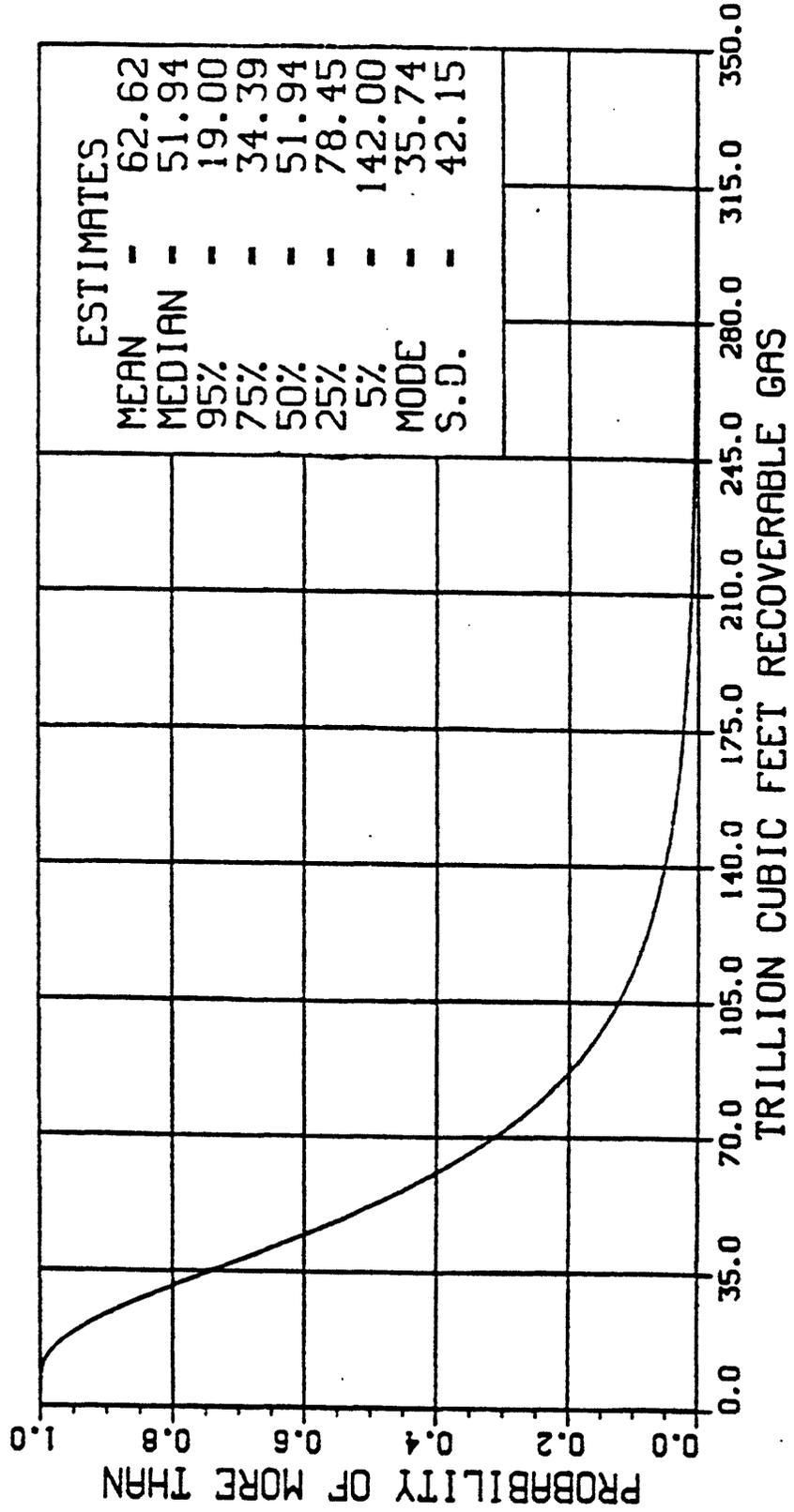


Table 2.--Supplementary and comparative data supporting this resource assessment of Volga-Urals basin, U.S.S.R.^{1/}

	<u>Crude Oil</u> (BB)		<u>Natural Gas</u> (Tcf)
1. Cumulative production to 1/1/80			Cumulative production to 1/1/80
	30-35		+ ^{2/}
2. Identified reserves ^{3/} to 1/1/80			Identified reserves to 1/1/80
Demonstrated	5		Demonstrated 75
Inferred	<u>5</u>		Inferred <u>25</u>
	<u>10</u>		<u>100</u>
			BBOE = 17
3. Original recoverable resources (ultimate) in BBOE			
Cumulative	35		+ ^{2/}
Identified reserves	10		100
Undiscovered			
resources (mean)	<u>7</u>		<u>63</u>
	<u>52</u>		<u>163+</u>
			BBOE = 27+
	Total	79+ BBOE	

^{1/} Cumulative production and reserves are composited estimates from various sources.

^{2/} Quantity positive but data not available.

^{3/} Follows terminology outlined in USGS Circular 831. Demonstrated is equivalent to API Proved and Indicated Additional. Inferred represents anticipated field growth in existing fields.

COMMENTS

- o Assessment does not include Permian tar sands which have approximately 100 BBO in place.
- o Assessment does not include the southern bounding peri-Caspian depression.
- o Cumulative production and reserve estimates are quite approximate.
- o Significant new plays are not likely in the area. Additional reserves delineation will likely be small fields proximal to existing production and from same part of stratigraphic section.
- o Though areas and amount of exploration are not well known, indirect evidence of location of subsurface data points suggests highly mature exploration province.
- o Extension of production to northwest is limited by lack of maturation of the Domenik source-rock facies.
- o Major oil in Devonian and Low Carboniferous. Upper Carboniferous and Permian will have many pools but small reserves.
- o Permian reef play along Urals may have been well tested already.
- o Orenburg gas field in southeast part of area is included in the assessment, was discovered in 1975, and contains reserves of 70 TCF.