



BIOGENIC GAS

BOTH BIOGENIC AND THERMAL GAS

PRINCIPALLY BIOGENIC *
PRINCIPALLY THERMAL °

ALL

BIOGENIC **
THERMAL °°

HYDRATE

PARTIAL OR TOTAL ✓
(OF BIOGENIC GAS)

BIOGENIC GAS

RESERVOIRS MIDDLE CRETACEOUS - CENOMANIAN: UVAT SERIES, URENGY BEDS - (POKUR SERIES) MULTIPLE SANDSTONES.

RESERVES OIL x 10⁹ ?
PRODUCED (DRY GAS)
PROVEN AND POSSIBLE (DRY GAS) 350 TCF
ULTIMATE (DRY GAS) -----

SOURCE LOWER AND MIDDLE CRETACEOUS COAL AND CARBONACEOUS SHALES: POKUR SERIES - UNDERLIE RESERVOIR.

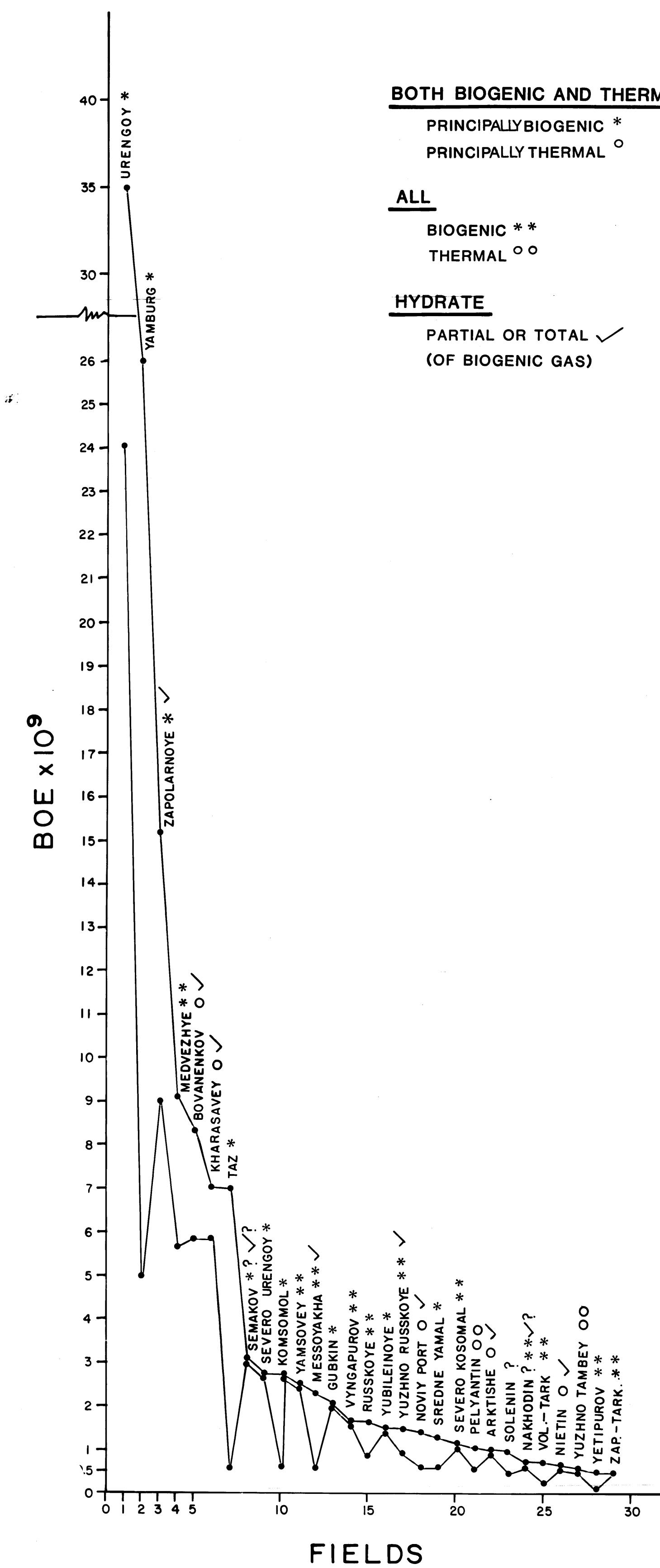
CAP IMMEDIATE - MIDDLE CRETACEOUS - TURONIAN; KUZNETOV HORIZON - LOWER DERBYSHIN SERIES, THICK SHALE. ULTIMATE - PERMAFROST (TERTIARY AND UPPER AND MIDDLE CRETACEOUS - SEE MAP AND CROSS SECTION), VARIABLE FROZEN ZONE (FROM 0 TO OVER 300 METERS AT PRESENT AND UP TO 1500 METERS IN PLEISTOCENE GLACIAL STAGES).

TIME OF MATURATION BIOGENIC - NO MATURATION, FORMED DURING LATE CRETACEOUS TO RECENT. (ACCUMULATED PLEISTOCENE TO RECENT).

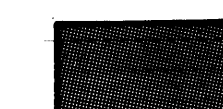
TIME OF TRAP FORMATION MOST TRAPS ARE LARGE BASEMENT CONTROLLED ARCHES WHICH SHOW GROWTH FROM JURASSIC TO THE PRESENT - GREATEST GROWTH RATES LATE CRETACEOUS TO RECENT.

TIME OF MIGRATION PROBABLY LATE CRETACEOUS TO RECENT - (ACCUMULATION PLEISTOCENE TO RECENT).

EXPULSION EFFICIENCY (NO FIGURES AVAILABLE ON SOURCE ROCK VOLUME) WITH ESTIMATED 800' NET AND 2% ORGANIC CARBON BY WEIGHT OF COAL AND CARBONACEOUS SHALE SOURCE AN EXPULSION EFFICIENCY OF 9% (DOE) - MAINLY DUE TO TRAPPING EFFICIENCY.



LEGEND



OIL



GAS



HYDRATE OR PARTIAL HYDRATE

----- 80° ----- TEMPERATURE IN FARENHEIT AT 3000' DEPTH
----- 4000 ----- DEPTH TO TOP OF CENOMANIAN

PERMAFROST

----- 300 METER THICKNESS
----- SOUTHERN EDGE (PRESENT DAY)
(LEAKAGE TO SOUTH?)

↑ UPLIFTS (HORSTS?)

AGE	K = CRETACEOUS CEN = CENOMANIAN
PORTION OF FIELDS RESERVES	++ = 100% TO 70% + = 70% TO 40% - = LESS THAN 40%
RELATION TO GAS WINDOW	BIO = BIOGENIC G = GAS H = HYDRATE

0 50 100 150 200
KILOMETERS

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International boundary representation is not necessarily authoritative.

BIOGENIC GAS
OIL AND GAS MAPS AND SECTIONS
OF THE WEST SIBERIAN BASIN
BY
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DATE: 1984 (information as of 1981)