GEOHYDROLOGIC SECTIONS

CACHE VALLEY, UTAH AND IDAHO

By

L. J. McGreevy and L. J. Bjorklund
Hydrologists, U.S. Geological Survey

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INTRODUCTION

This report was prepared as a part of a study of the ground-water resources of Cache Valley, Utah and Idaho. The study by the U.S. Geological Survey was made during 1967-70 in cooperation with the Utah Department of Natural Resources, Division of Water Rights. The U.S. Bureau of Reclamation and the U.S. Soil Conservation Service cooperated by providing services; and counties, cities, irrigation districts, and some local organizations and businesses in both Utah and Idaho cooperated financially through the Utah Department of Natural Resources. In addition to this report, results of the study are presented in a basic-data release (McGreevy and Bjorklund, 1970) and in an interpretive report in preparation.

Geologic and hydrologic data are combined and presented on a series of cross sections. Geologic contacts and faults or fault zones are based on indicated well logs, on the geologic map in the interpretive report (in preparation), and on gravity data by Peterson and Oriel (1970).

WELL- AND SPRING-NUMBERING SYSTEMS

The system of numbering wells and springs in Utah is based on the cadastral land-survey system of the U.S. Government. The number identifies the well or spring and locates its position to the nearest 10-acre tract in the land net. By this system, the State is divided into four quadrants by the Salt Lake base line and meridian, and these quadrants are designated by the uppercase letters A, B, C, and D, thus: A, for the northeast quadrant; B, for the northwest; C, for the southwest; and D, for the southeast quadrant. Numbers designating the township and range, respectively, follow the quadrant letter, and the three are enclosed in parentheses. The number after the parentheses designates the section, and the letters following the section number give the location within the section. The first letter indicates the quarter section, which is generally a tract of 160 acres; the second letter indicates the 40-acre tract, and the third letter indicates the 10-acre tract. The numbers that follow the letters indicate the serial number of the well or spring within the 10-acre tract. Thus well (A-11-1)8cbb-1 in Cache Valley is in the NW¼NW¼SW¼ sec. 8, T. 11 N., R. 1 E., and is the first well constructed or visited in that tract. (See fig. 1.)

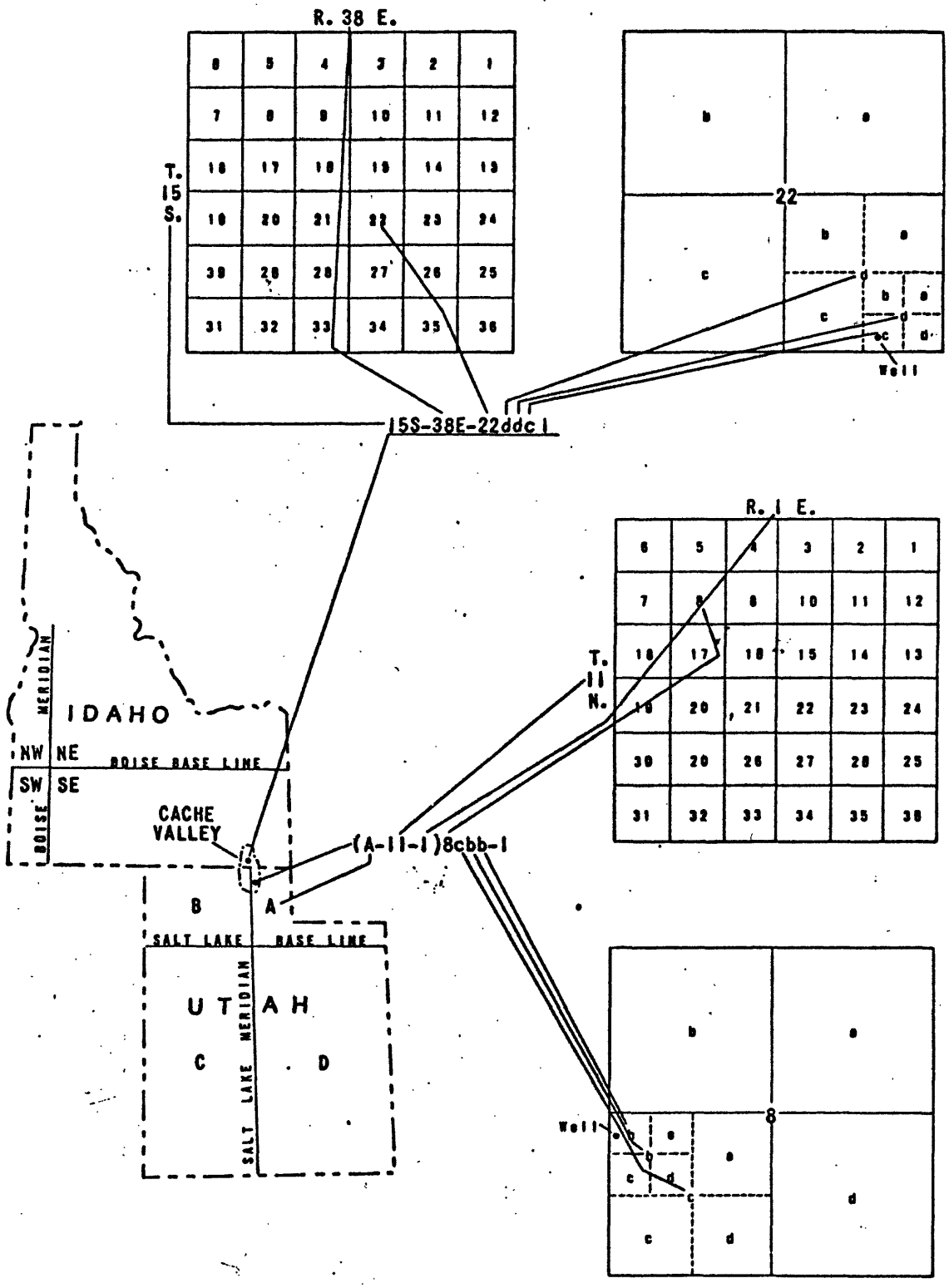

Figure 1A—Well- and spring-numbering systems used in Utah and Idaho.

Springs are numbered similarly except that they are designated by the letter S preceding the serial number. Thus (B-10-1)10aac-S1 is a spring in the SW¼NE¼NE¼ sec. 10, T. 10 N., R. 1 W.

In Idaho the well- and spring-numbering system is based on the cadastral land survey with reference to the Boise base line and meridian. It is similar to the Utah system except that springs are not designated by the letter S and the quadrant letter is omitted; the townships are labeled N or S to designate north or south and the ranges are labeled E or W to designate east or west. Thus well 15S-38E-22ddc1 is the first well visited in the SW¼SE¼SE¼ sec. 22, T. 15 S., R. 38 E. (See fig. 1.)

UNITS FOR REPORTING TEMPERATURE

Water temperatures throughout the report are reported in degrees Celsius (°C) rather than in the more familiar degrees Fahrenheit (°F). Readers not acquainted with the Celsius scale of temperature will find the following table useful in converting the reported temperatures to the Fahrenheit scale:

TEMPERATURE-CONVERSION TABLE

For conversion of temperature in degrees Celsius (°C) to degrees Fahrenheit (°F). Conversions are based on the equation, °F = 1.8°C + 32; Temperatures in °F are rounded to nearest degree. Underscored equivalent temperatures are exact equivalents. For temperature conversions beyond the limits of the table, use the equation given, and for converting from °F to °C, use °C = 0.5556 (°F - 32). The equations say, in effect, that from the freezing point (0°C, 32°F) the temperature rises (or falls) 5°C for every rise (or fall) of 9°F.

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-20	-4	-10	14	0	32	10	50	20	68	30	86	40	104
-19	-2	-9	16	+1	34	11	52	21	70	31	88	41	106
-18	0	-8	18	2	36	12	54	22	72	32	90	42	108
-17	+1	-7	19	3	37	13	55	23	73	33	91	43	109
-16	3	-6	21	4	39	14	57	24	75	34	93	44	111
-15	5	-5	23	5	41	15	59	25	77	35	95	45	113
-14	7	-4	25	6	43	16	61	26	79	36	97	46	115
-13	9	-3	27	7	45	17	63	27	81	37	99	47	117
-12	10	-2	28	8	46	18	64	28	82	38	100	48	118
-11	12	-1	30	9	48	19	66	29	84	39	102	49	120

REFERENCES

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McGreevy, L. J., and Bjorklund, L. J., 1970, Selected hydrologic data, Cache Valley, Utah and Idaho: U.S. Geol. Survey open-file release (duplicated as Utah Basic-Data Release 21).

Peterson, D. L., and Oriel, S. S., 1970, Gravity anomalies in Cache Valley, Cache and Box Elder Counties, Utah, and Bannock and Franklin Counties, Idaho, in Geological Survey Research 1970: U.S. Geol. Survey Prof. Paper 700-C, p. C114-C118.

Trautman, M. A., and Willis, E. H., 1966, Isotopes Inc. radiocarbon measurements V: Radiocarbon, v. 8, p. 161-203.

GEOHYDROLOGIC SECTIONS

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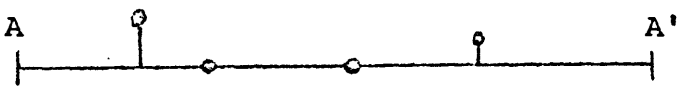
Explanation



Location of section

Showing location of well, testhole, or vertical electrical sounding projected to section.

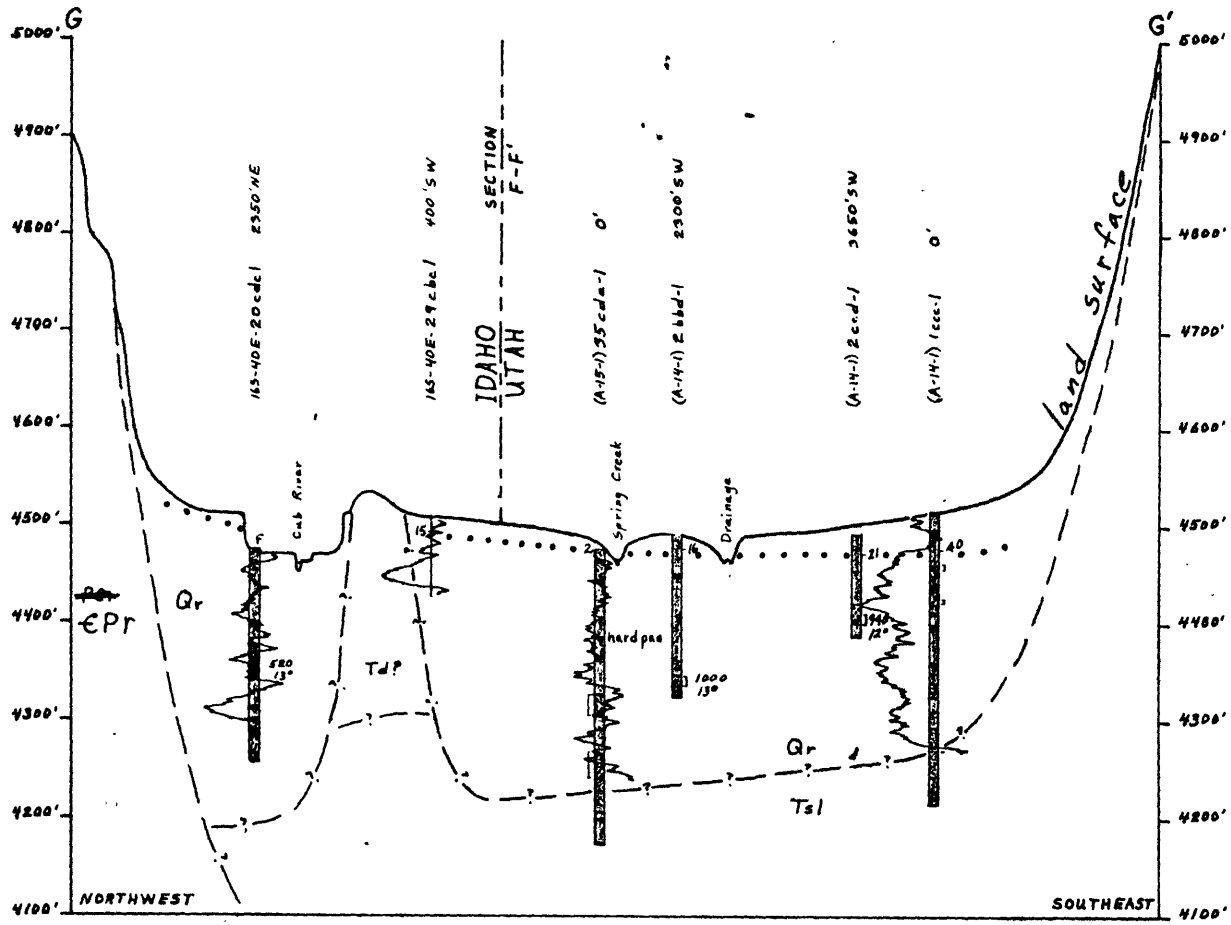

G
G'
5000'
4900'
4800'
4700'
4600'
4500'
4400'
4300'
4200'
4100'
IDAHO
UTAH
SECTION F-F'
(A-15-40E-20 cdc-1 2350'NE
(A-15-40E-29 cbc-1 400'SW
(A-15-1) 35 cda-1 0'
(A-14-1) 2 bbd-1 2300'SW
(A-14-1) 2 ccd-1 3650'SW
(A-14-1) 1 ccc-1 0'
Land Surface
Cub River
Spring Creek
Drainage
Qr
€Pr
Tdp
Tsl
hard pan
NORTHWEST
SOUTHEAST
0
1
2
3
4 MILES
VERTICAL EXAGGERATION X20
Datum is mean sea level

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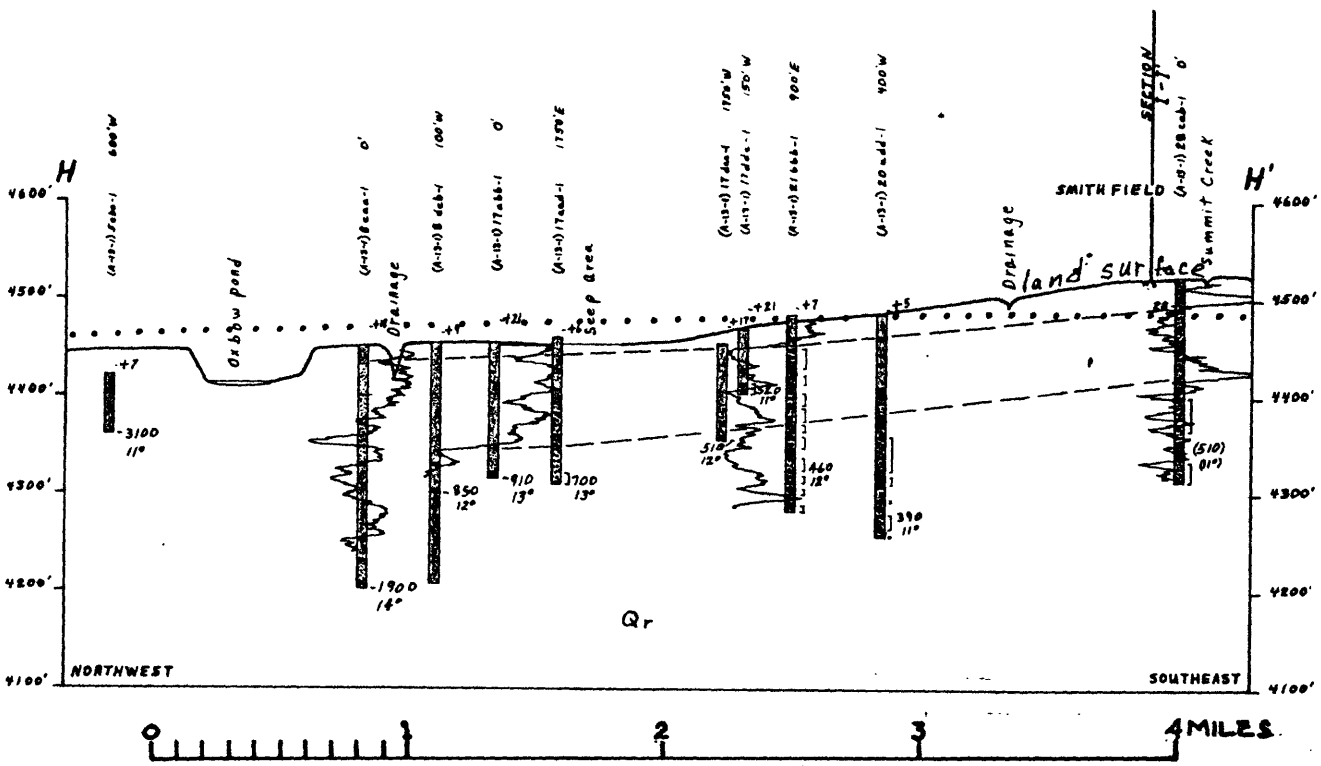
Fig 7



VERTICAL EXAGGERATION X20

Datum is mean sea level

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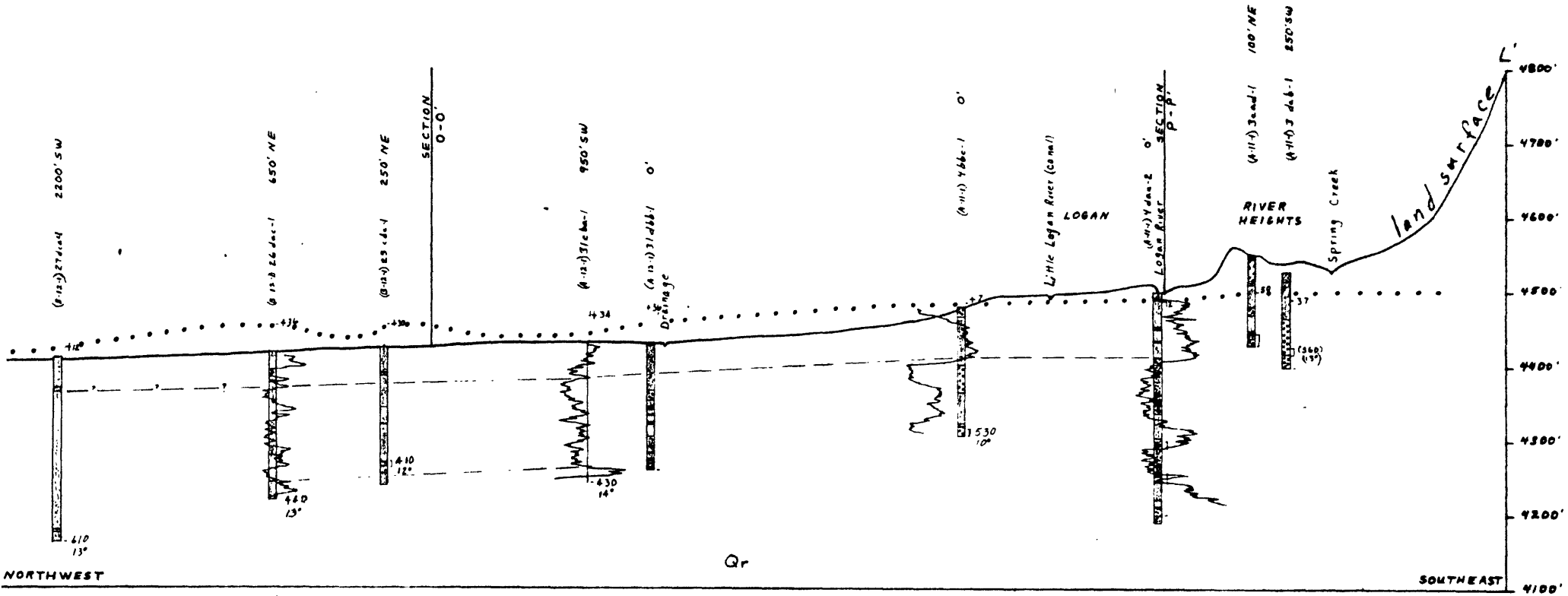
Fig 8


SECTION O-O'
SECTION P-P'
2200' SW
650' NE
250' NE
950' SW
0'
0'
L'
Little Logan River (canal)
LOGAN
Logan River
RIVER HEIGHTS
100' NE
250' SW
Spring Creek
land surface
4800'
4700'
4600'
4500'
4400'
4300'
4200'
4100'
NORTHWEST
SOUTHEAST
Qr
0
1
2
3
4 MILES
VERTICAL EXAGGERATION X 20
Datum is mean sea level

71-193

Fig 12