



МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
федеральное государственное бюджетное образовательное учреждение
высшего образования
«РОССИЙСКИЙ ГОСУДАРСТВЕННЫЙ
ГИДРОМЕТЕОРОЛОГИЧЕСКИЙ УНИВЕРСИТЕТ»

Кафедра водно-технических изысканий

ВЫПУСКНАЯ КВАЛИФИКАЦИОННАЯ РАБОТА
(бакалаврская работа)

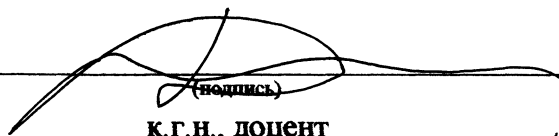
На тему Особенности построения
кривых зависимости расходов
от уровня при побочном типе
руслового процесса на примере
участка реки Вычегда

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(фамилия, имя, отчество)

Руководитель К. Г. Н., доцент
(ученая степень, ученое звание)

Исаев Дмитрий Игоревич
(фамилия, имя, отчество)

«К защите допускаю»
Заведующий кафедрой


(подпись)

К. Г. Н., доцент
(ученая степень, ученое звание)

Исаев Дмитрий Игоревич
(фамилия, имя, отчество)

«15» 06 2020.

Санкт-Петербург
2020

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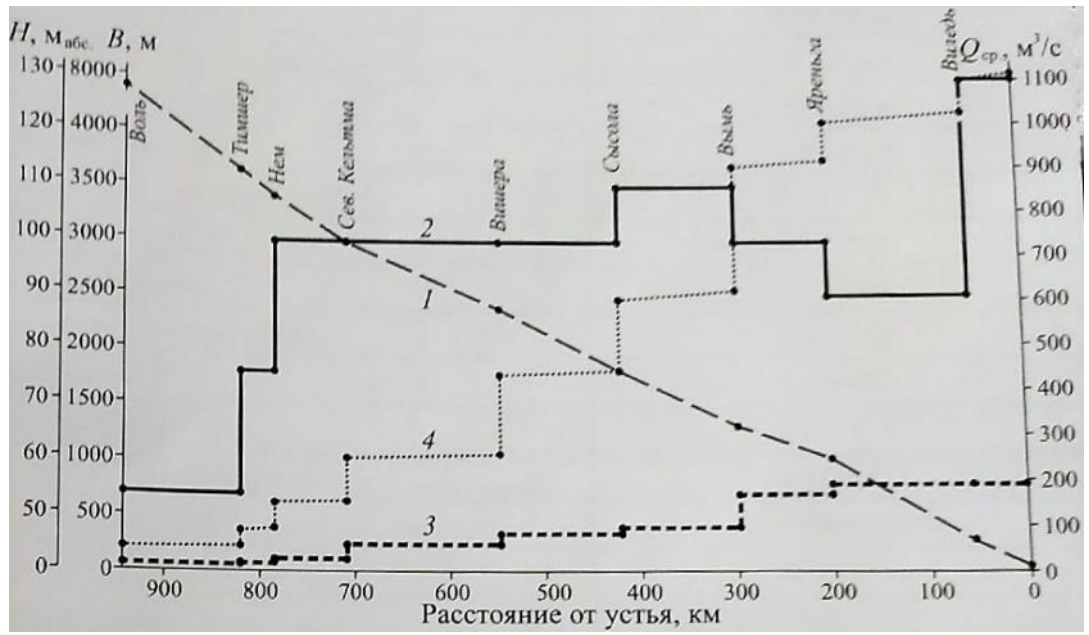
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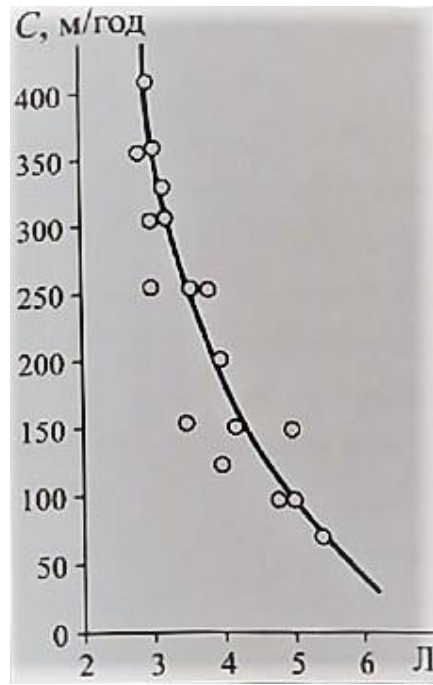
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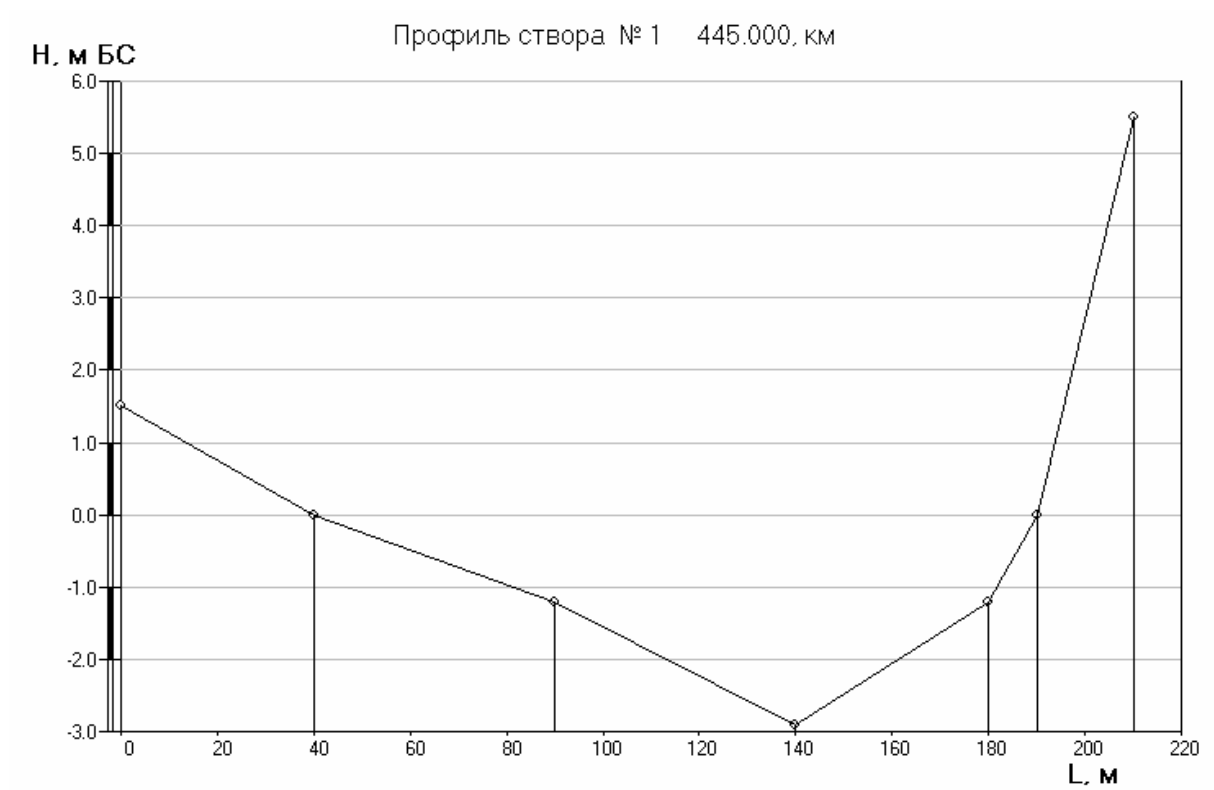
«Profiles».

2.1

445-448 .

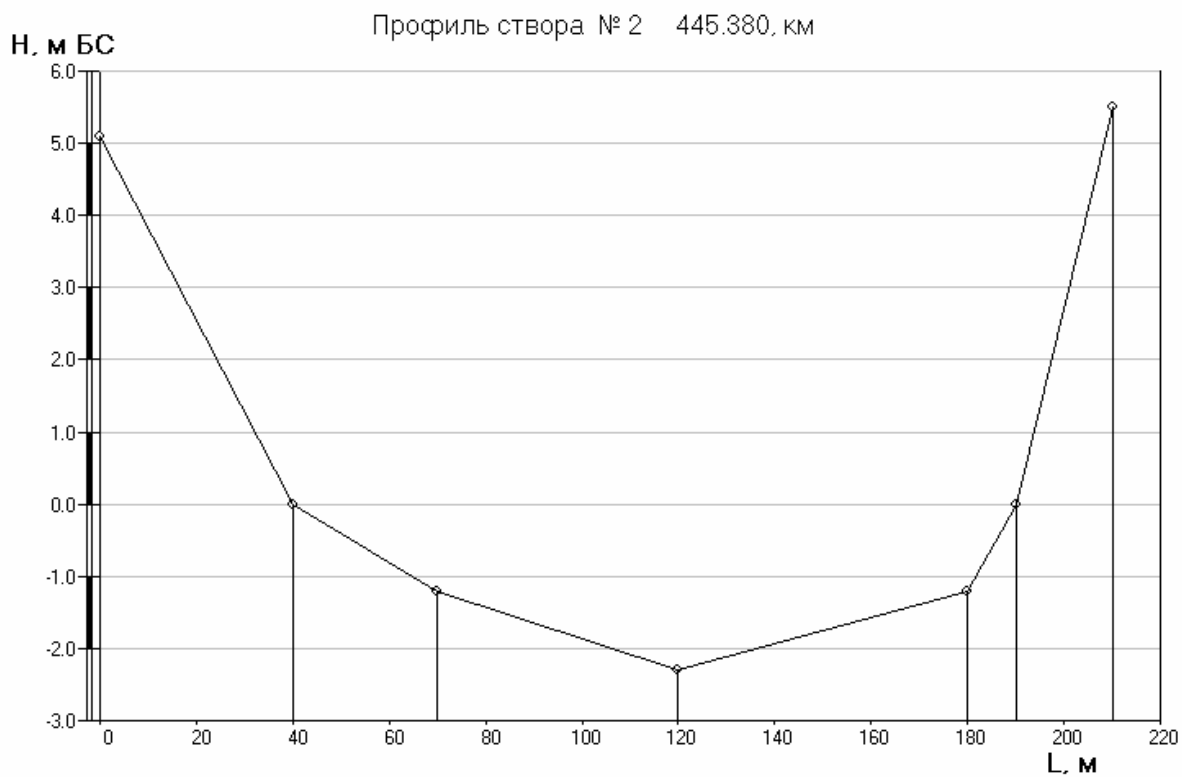
445-448

(. 2.1.1-2.1.13):

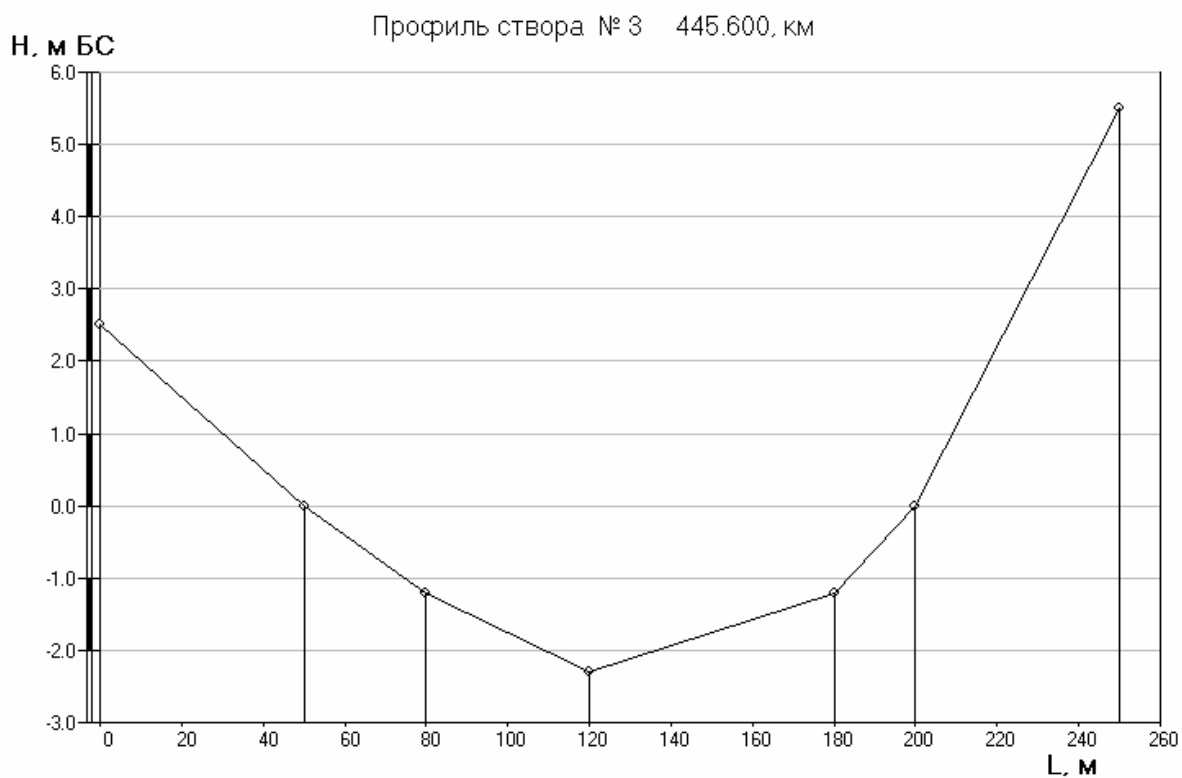


2.1.1 –

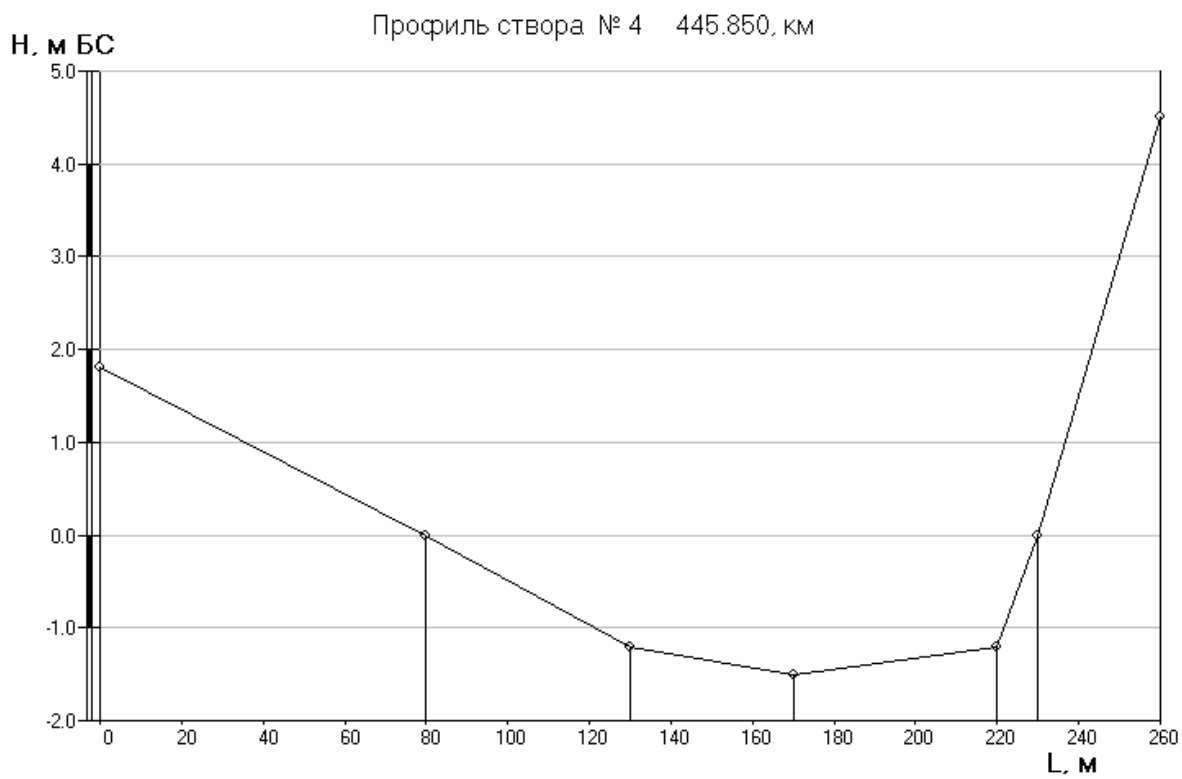
1 (445)



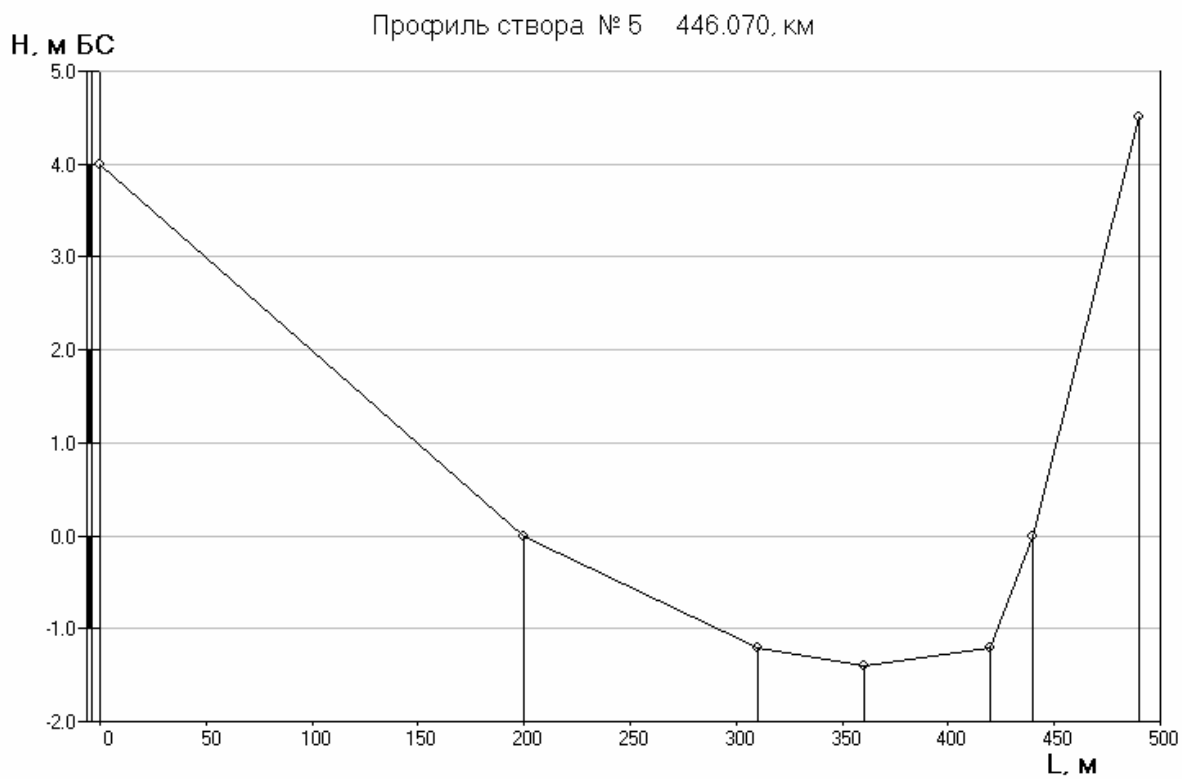
2.1.2 – 2 (445,380)



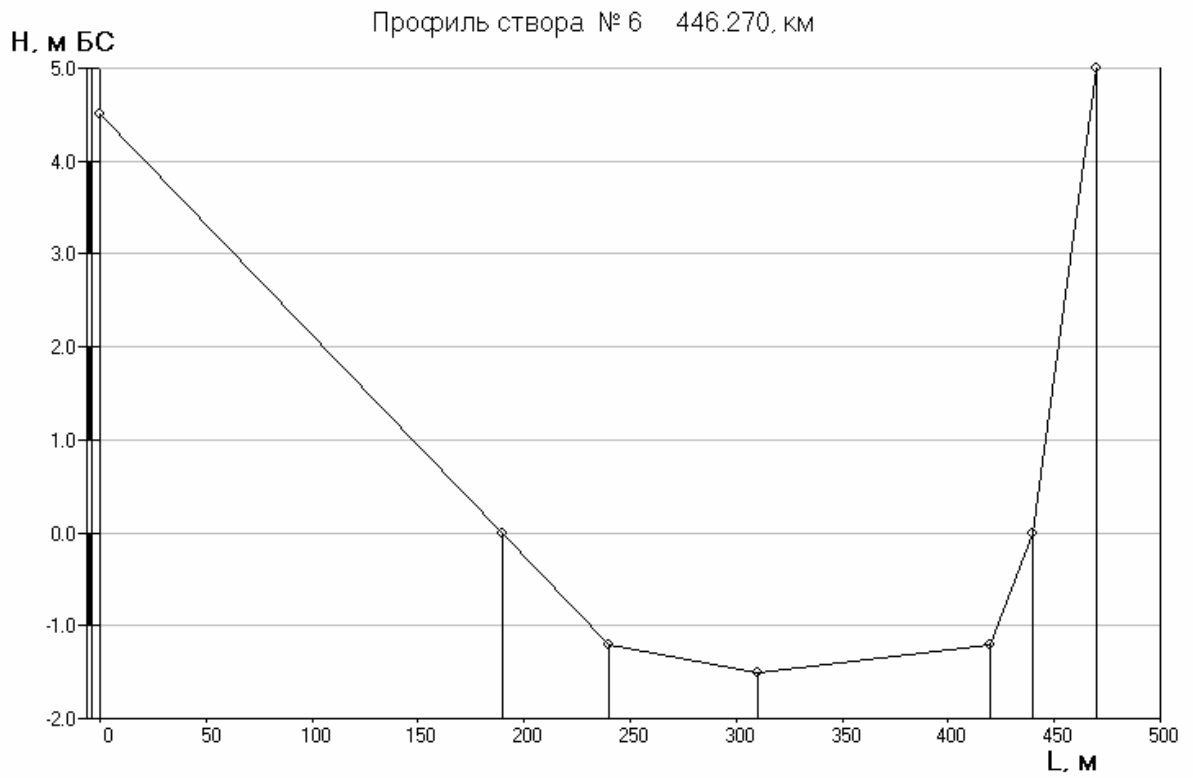
2.1.3 – 3 (445,6)



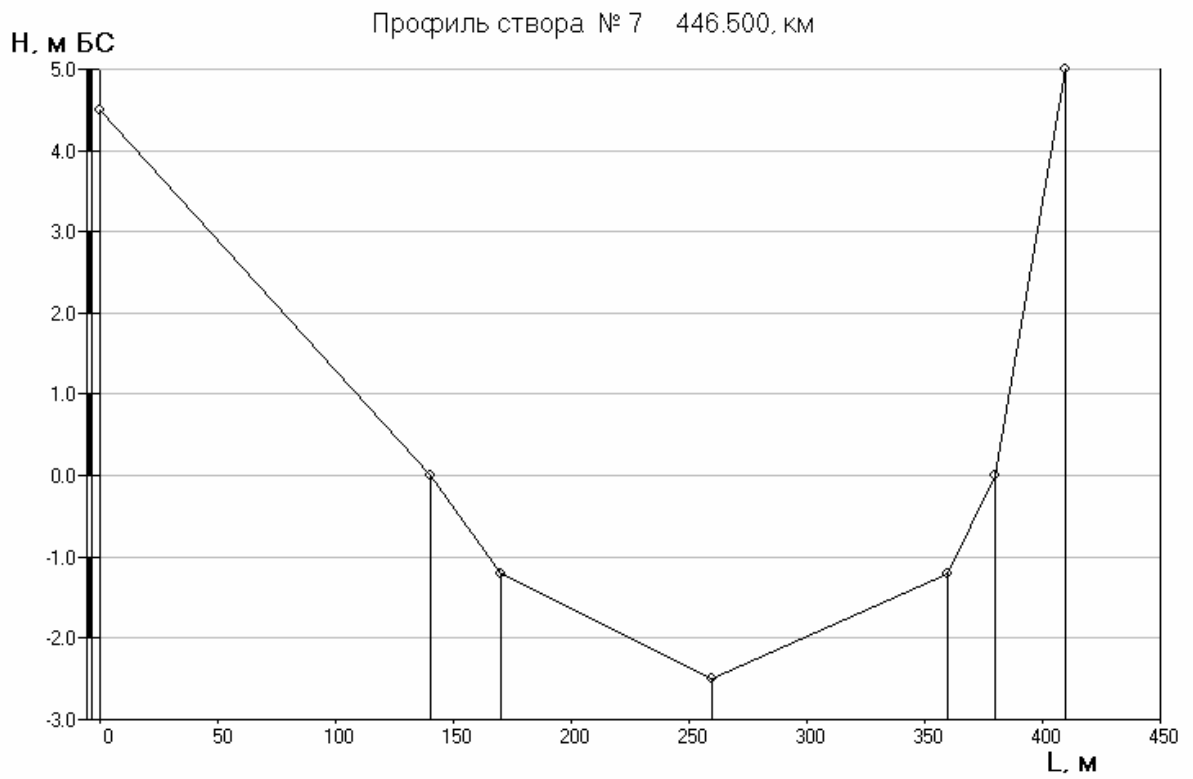
2.1.4 – 4 (445,850)



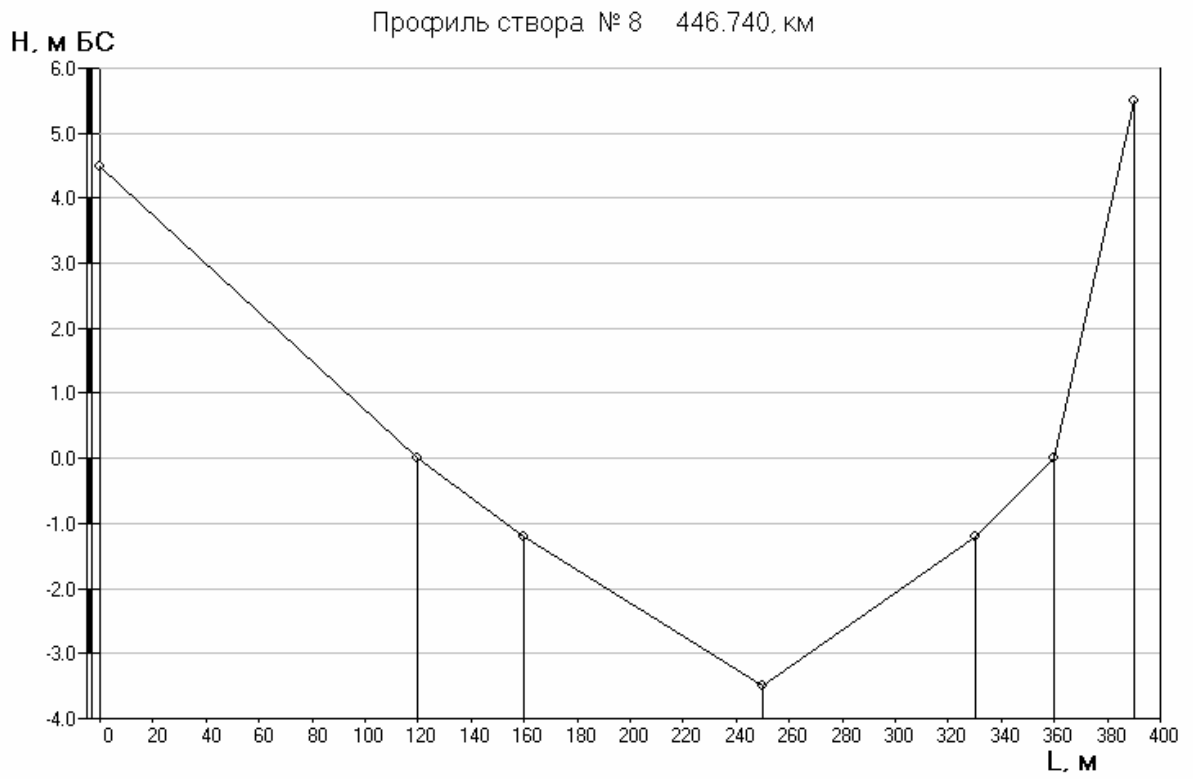
2.1.5 – 5 (446,07)



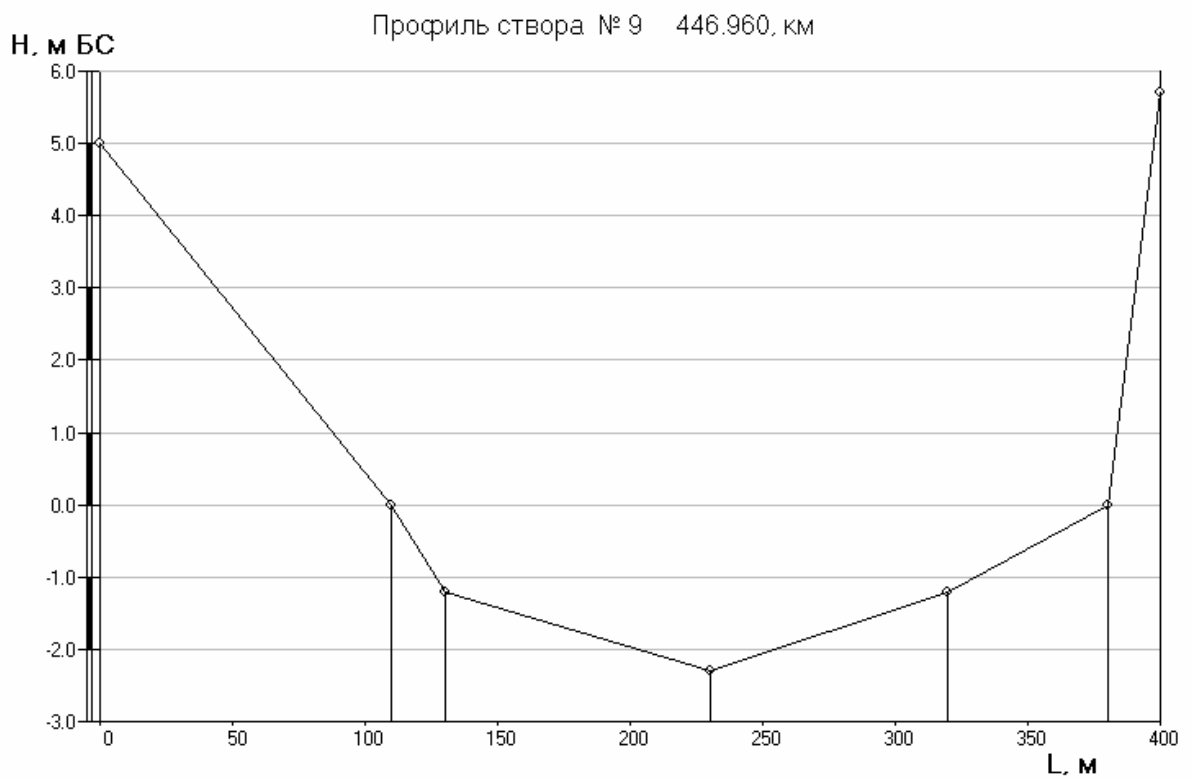
2.1.6 – 6 (446,270)



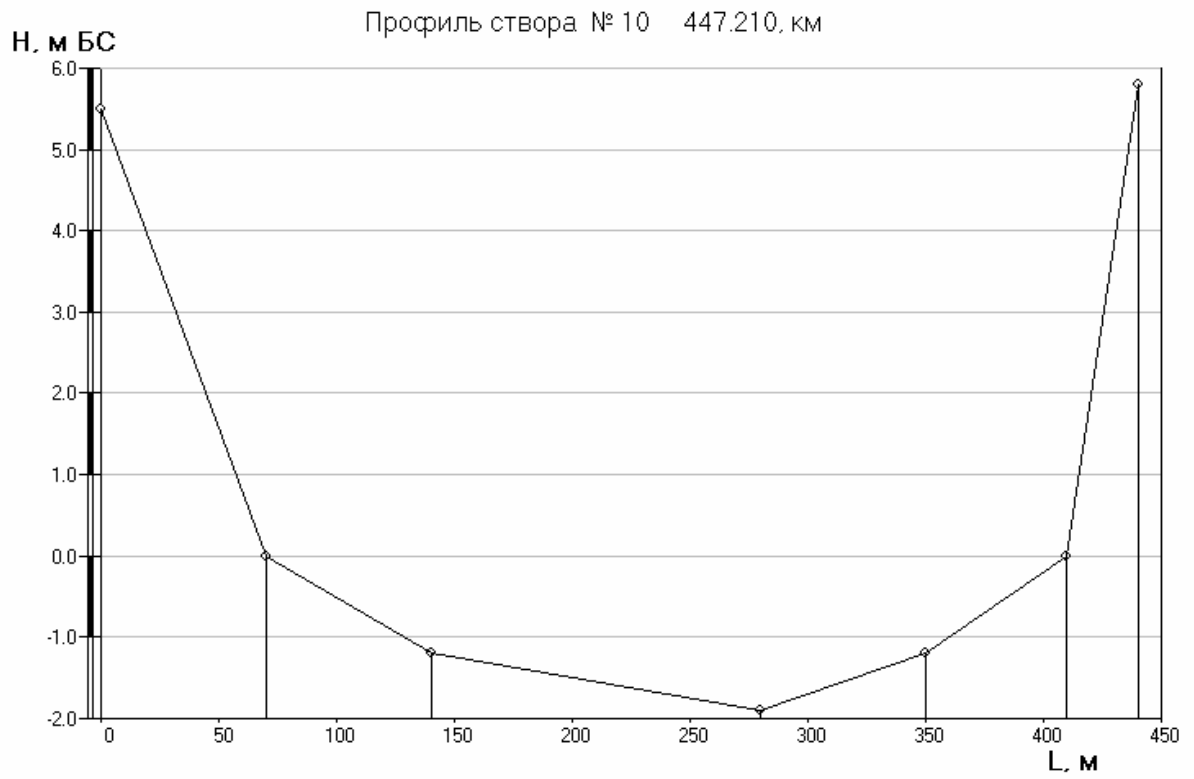
2.1.7 – 7 (446,5)



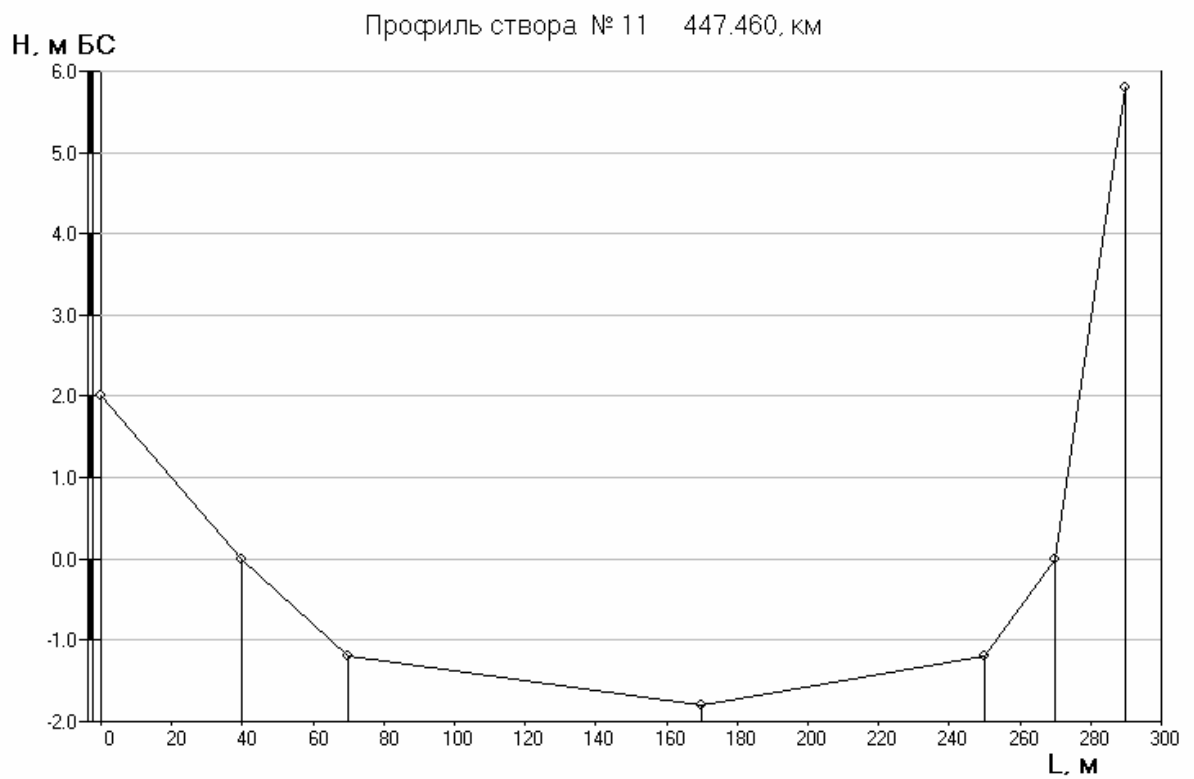
2.1.8 – 8 (446,740)



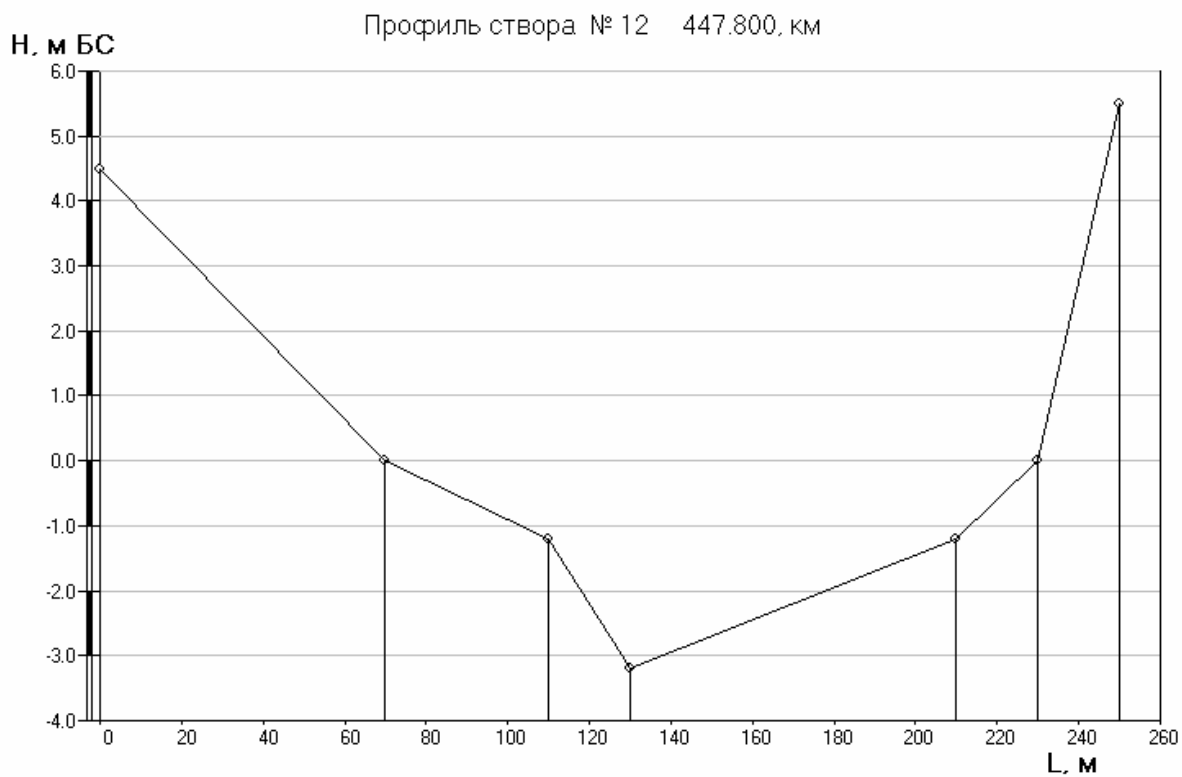
2.1.9 – 9 (446,960)



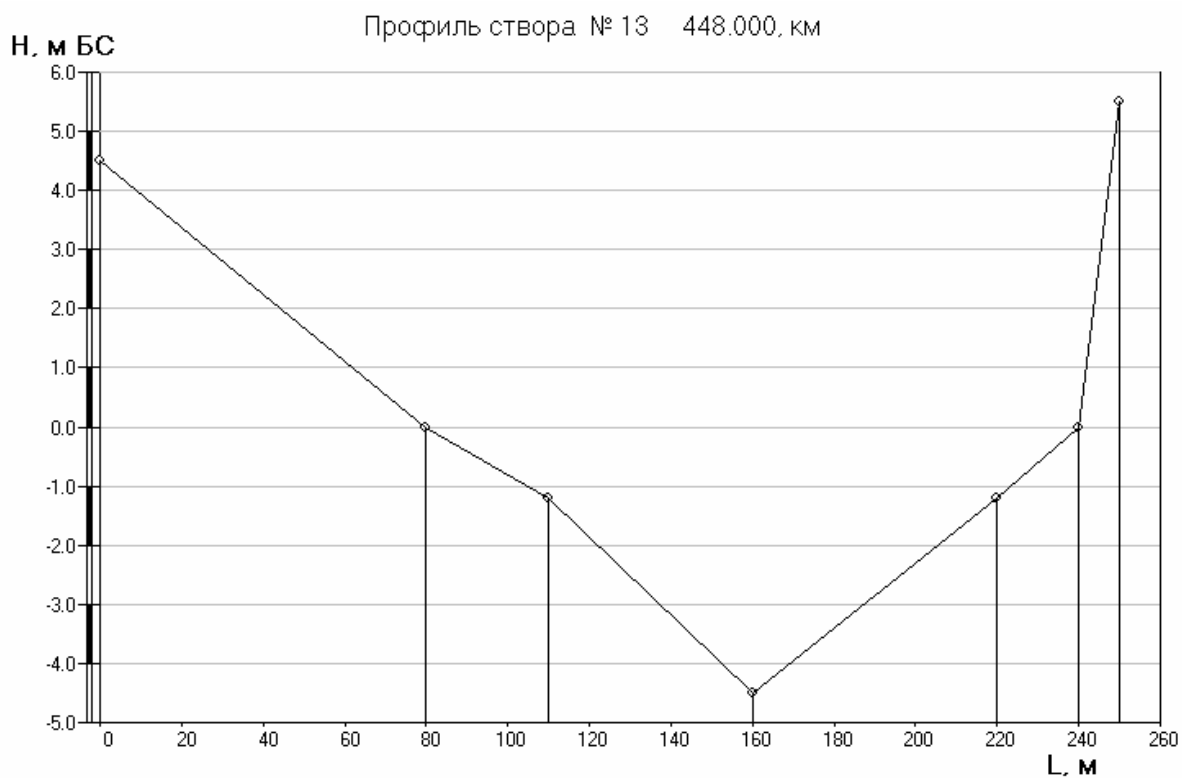
2.1.10 – 10 (447,210)



2.1.11 – 11 (447,460)



2.1.12 – 12 (447,800)

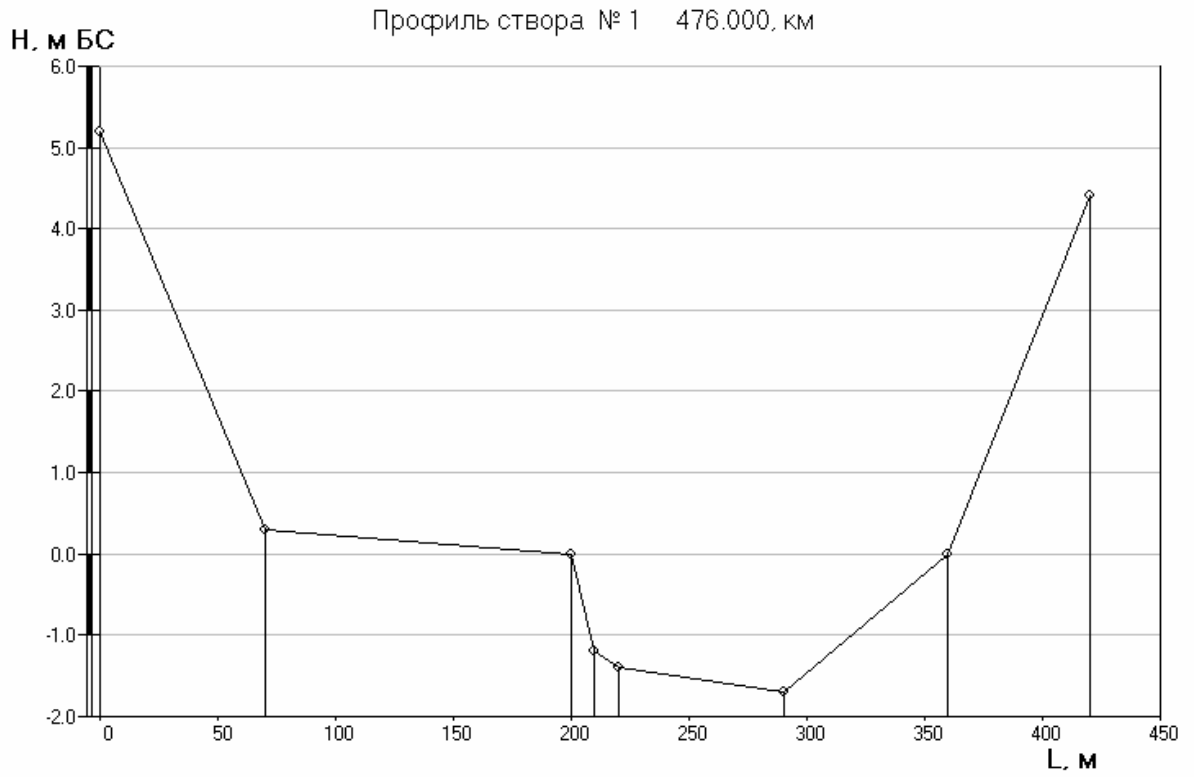


2.1.13 – 13 (448)

476-478

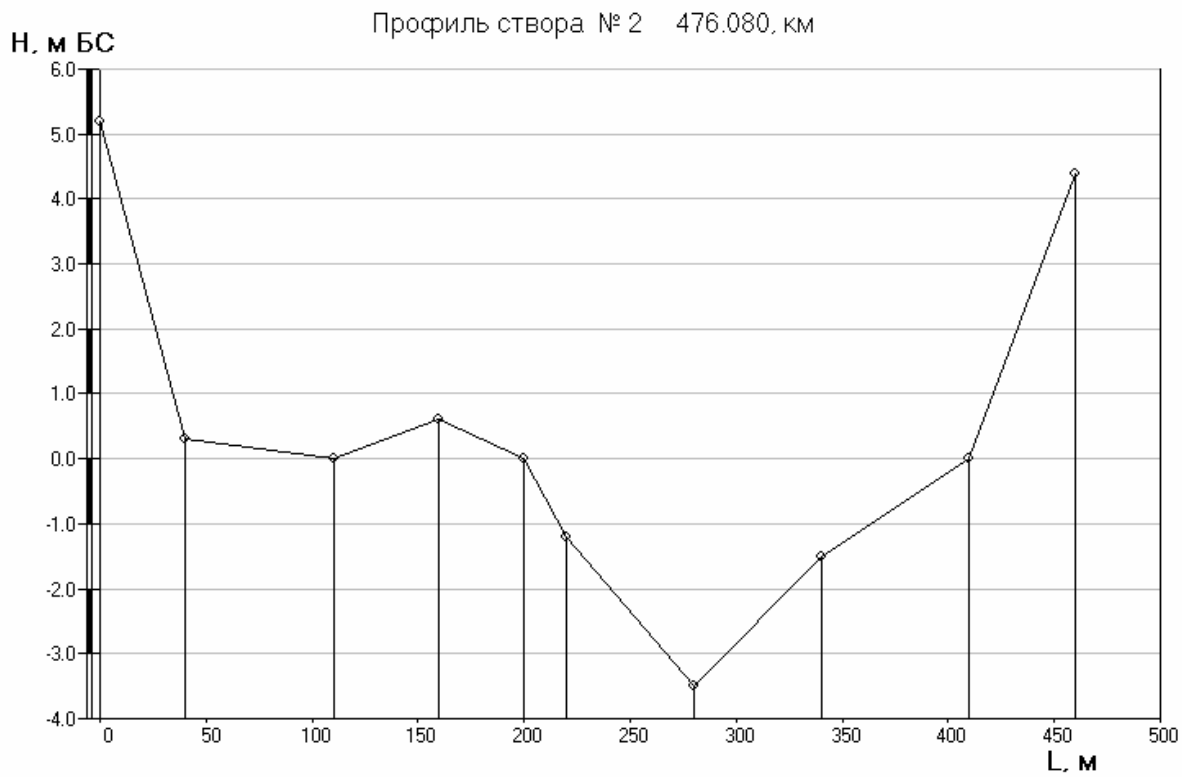
(. 2.2.1 -

2.2.15):

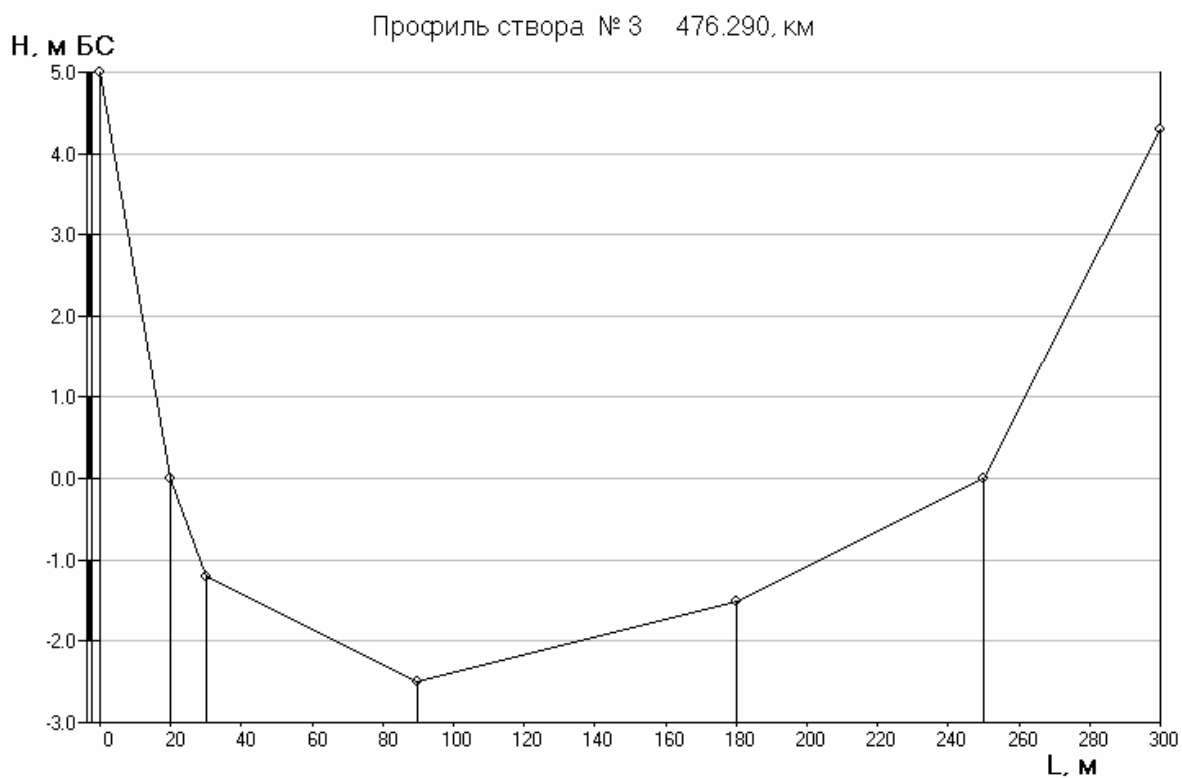


2.2.1 -

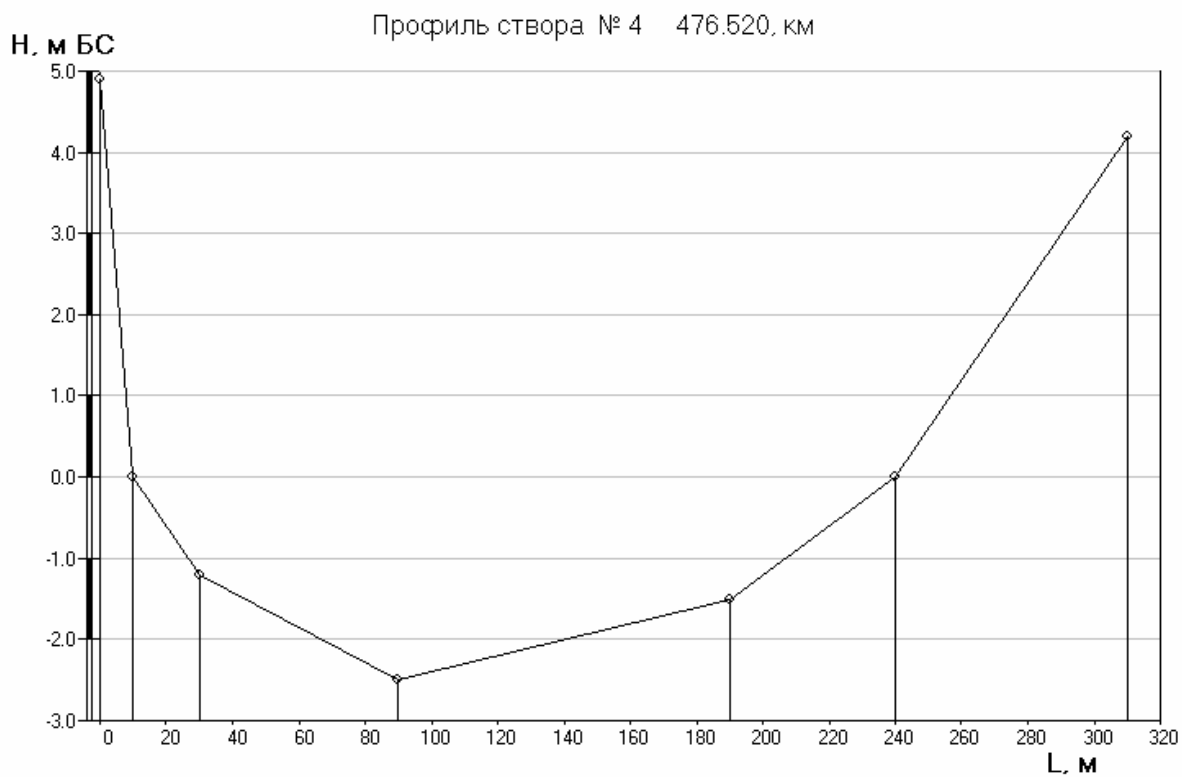
1 (476)



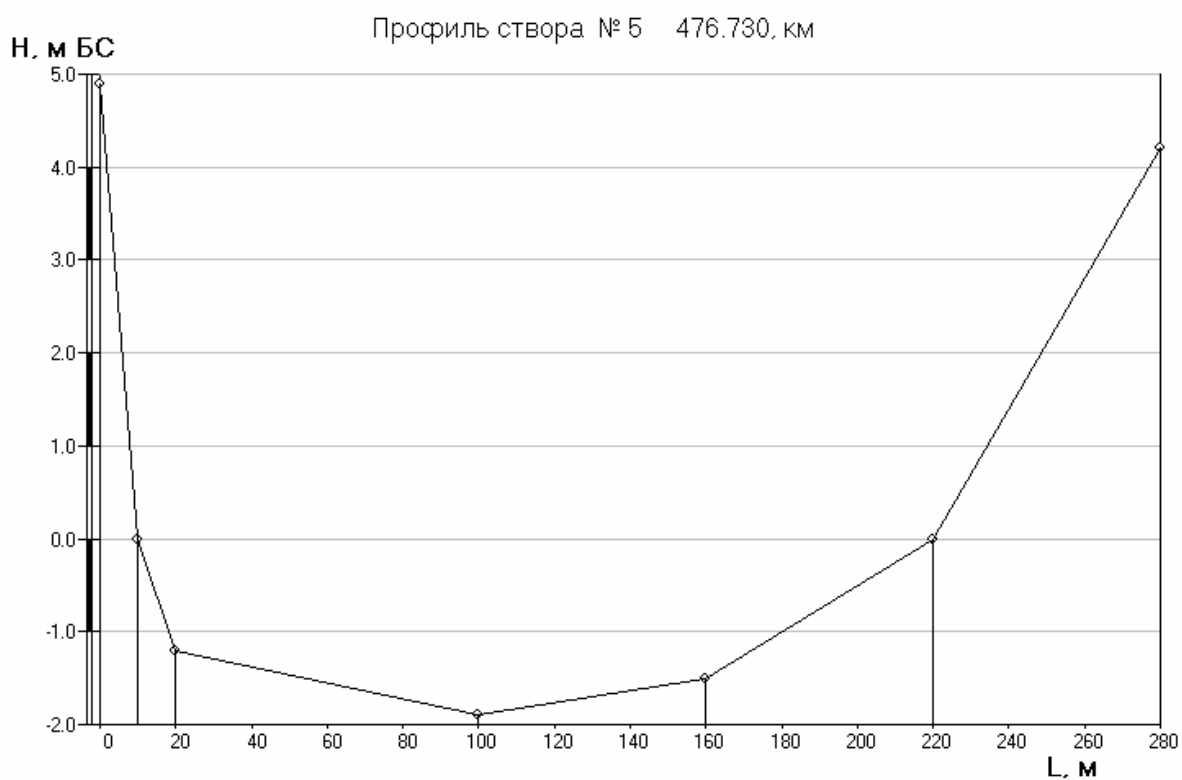
2.2.2 – 2 (476,080)



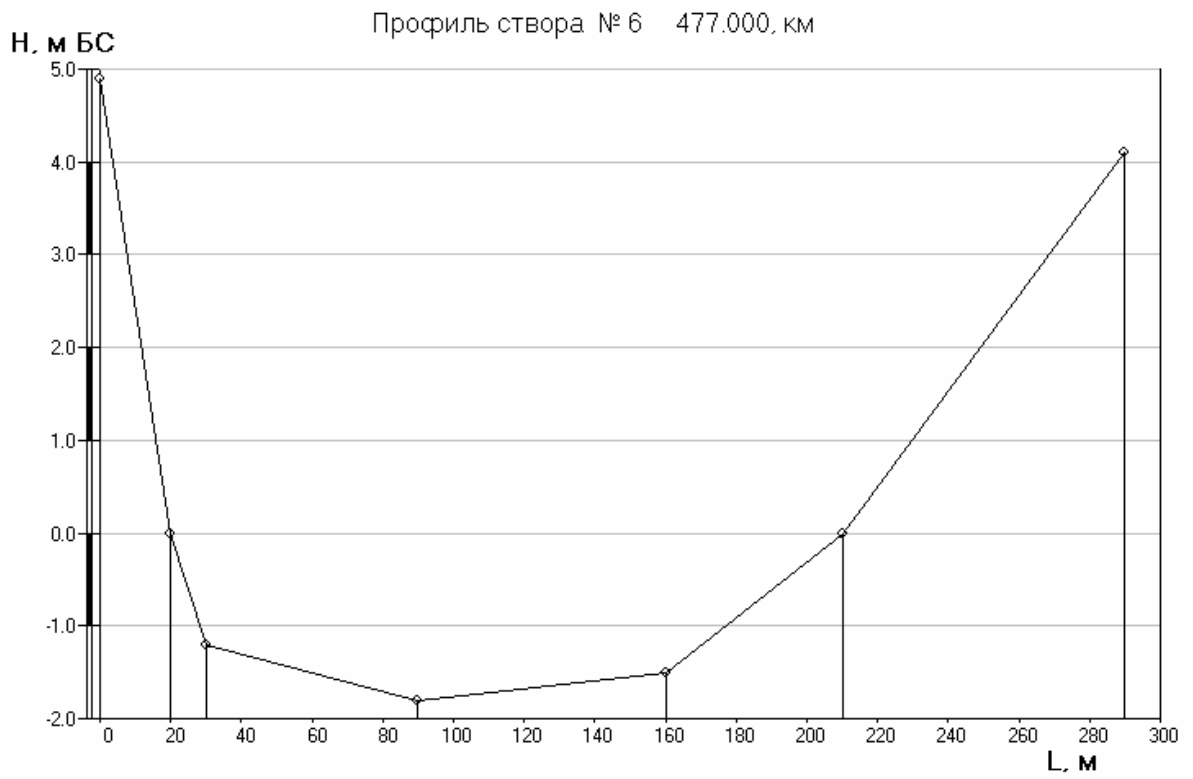
2.2.3 – 3 (476,290)



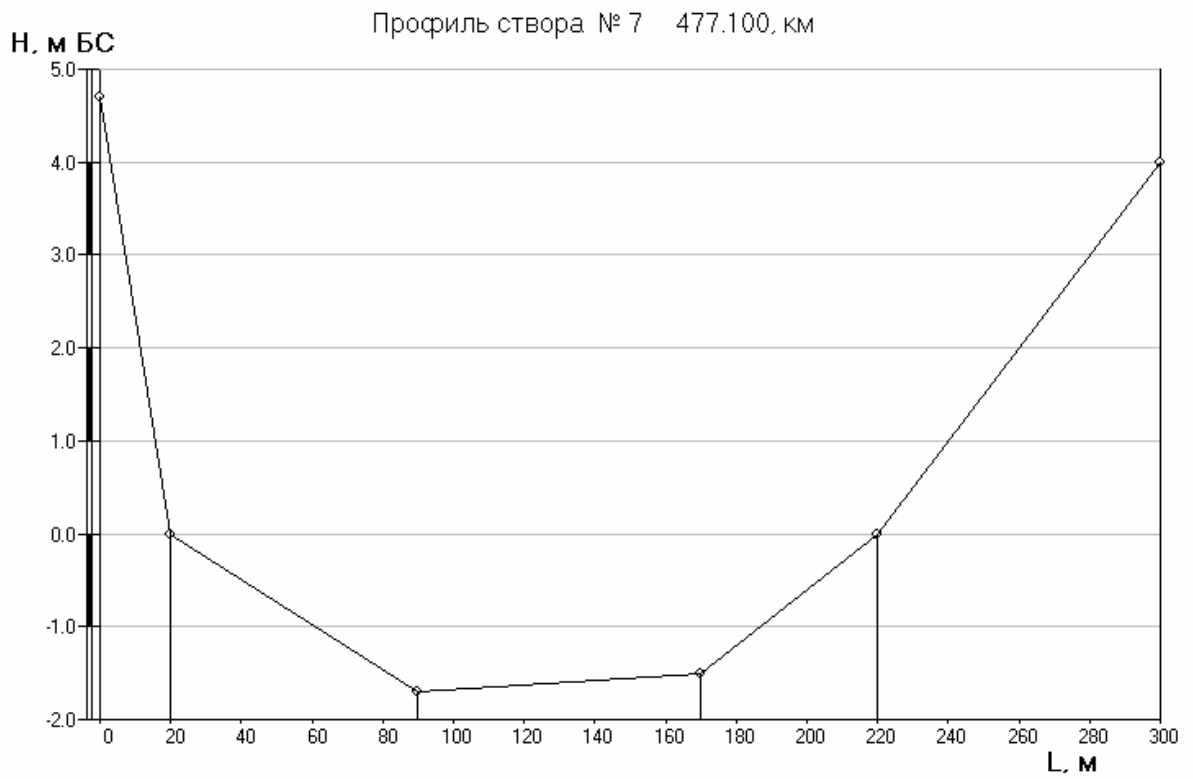
2.2.4 – 4 (476,520)



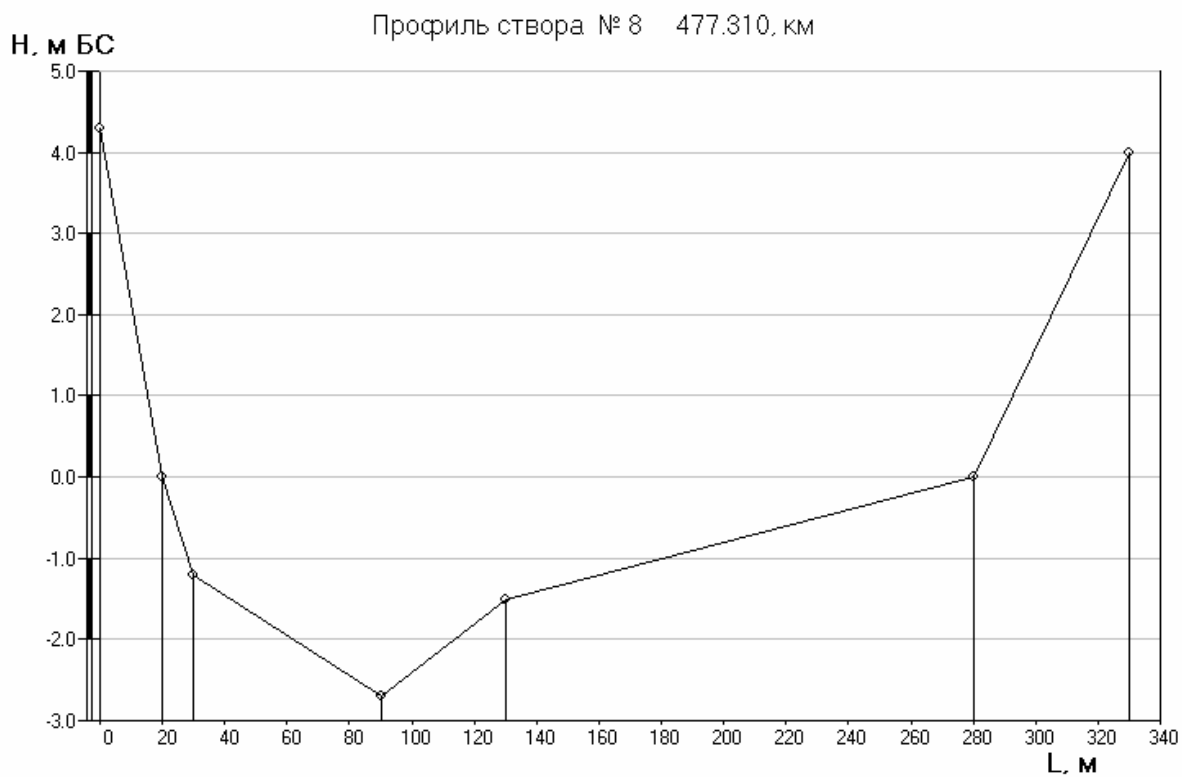
2.2.5 – 5 (476,730)



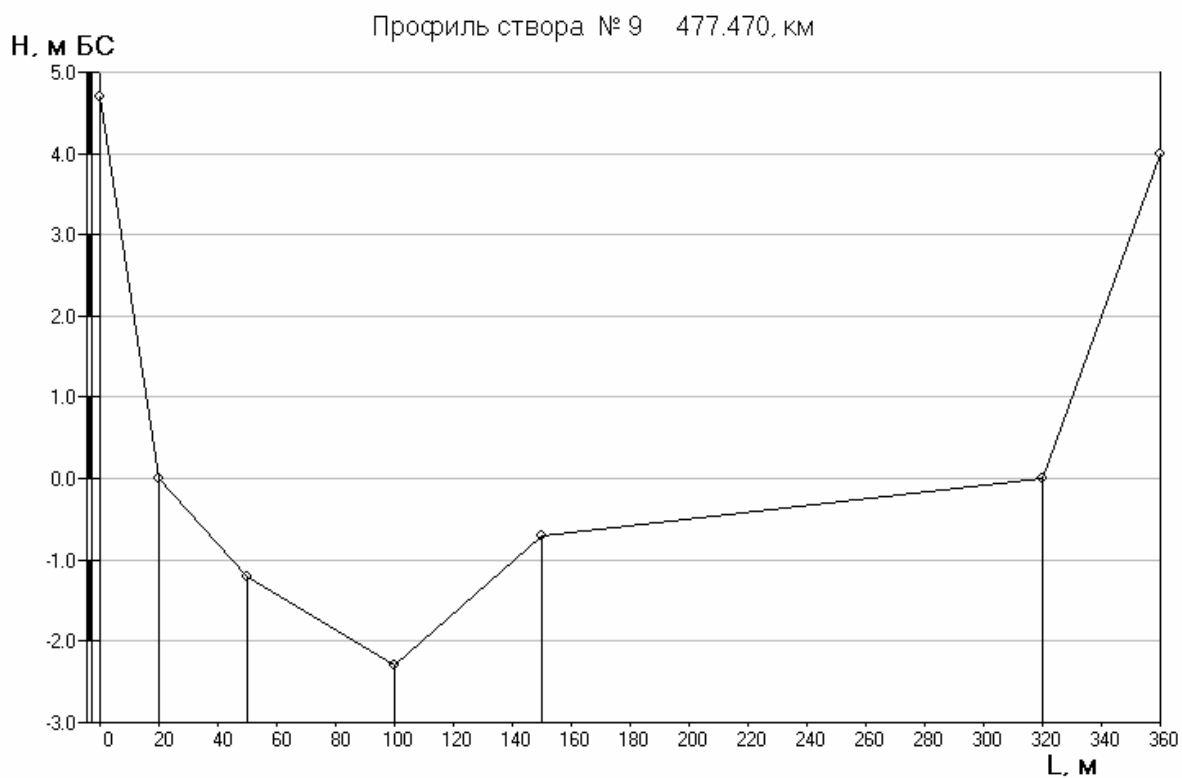
2.2.6 – 6 (477)



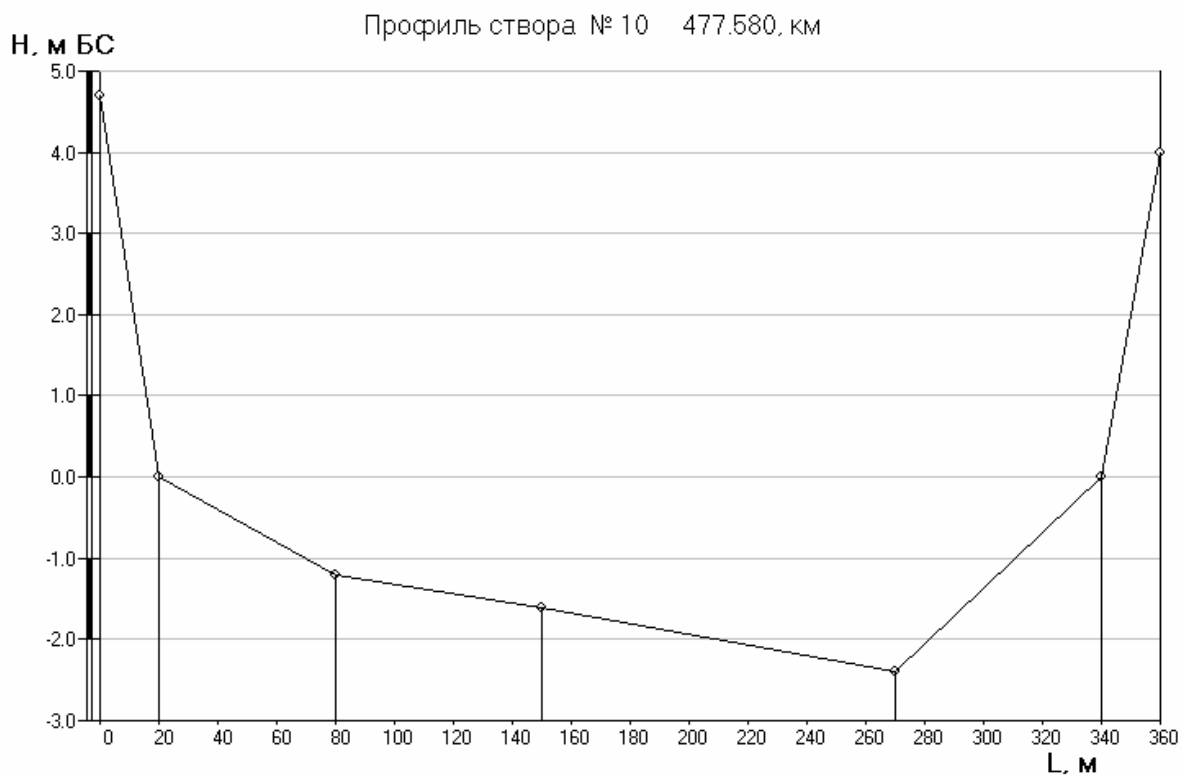
2.2.7 – 7 (477,1)



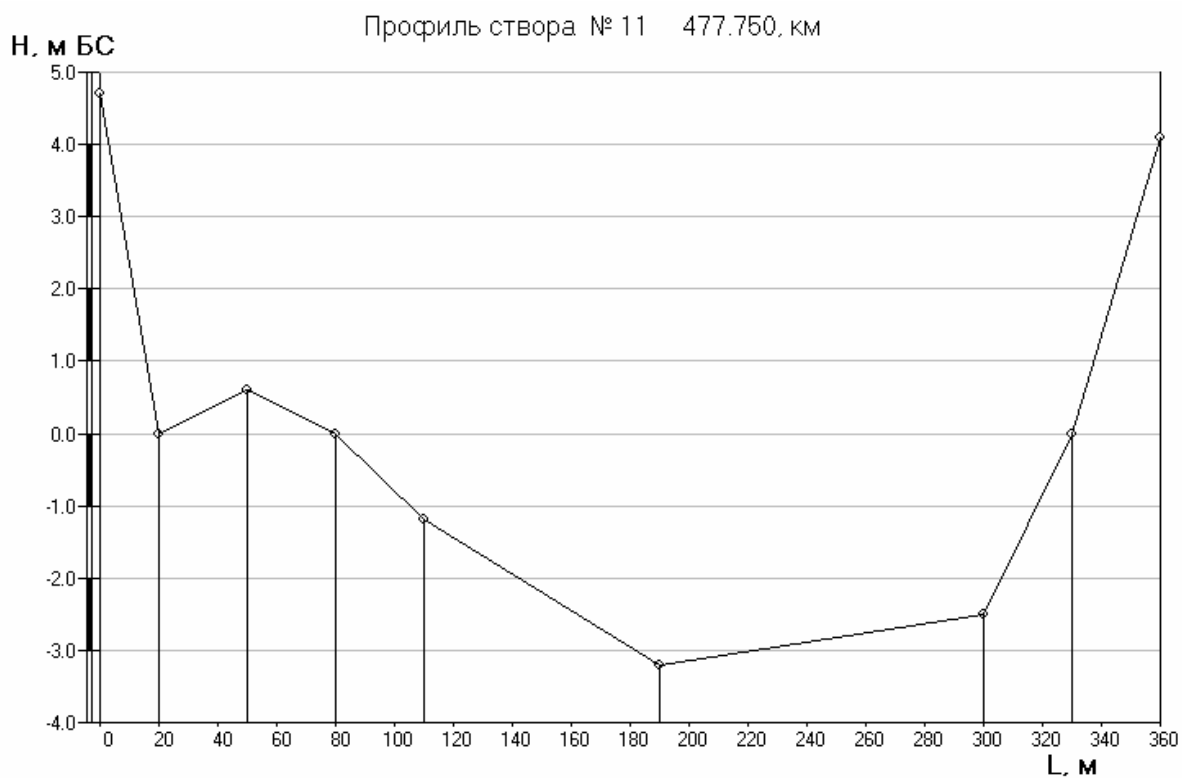
2.2.8 – 8 (477,310)



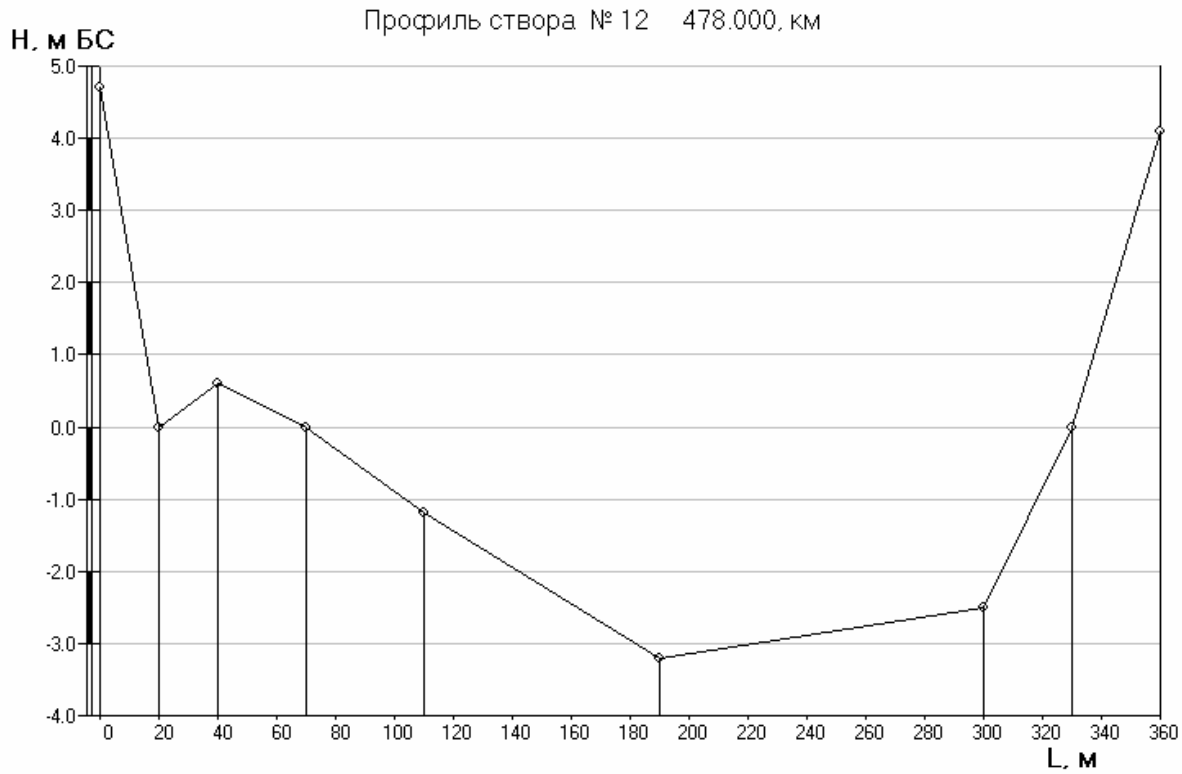
2.2.9 – 9 (477,470)



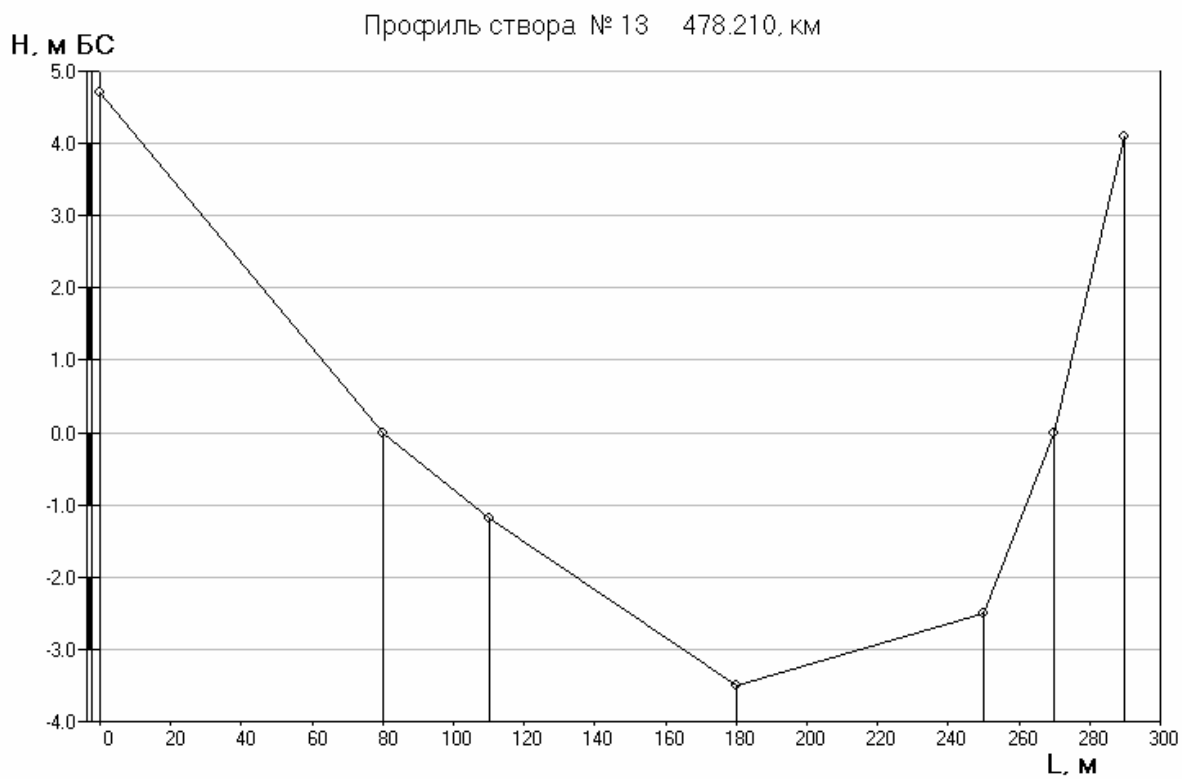
2.2.10 – 10 (477,580)



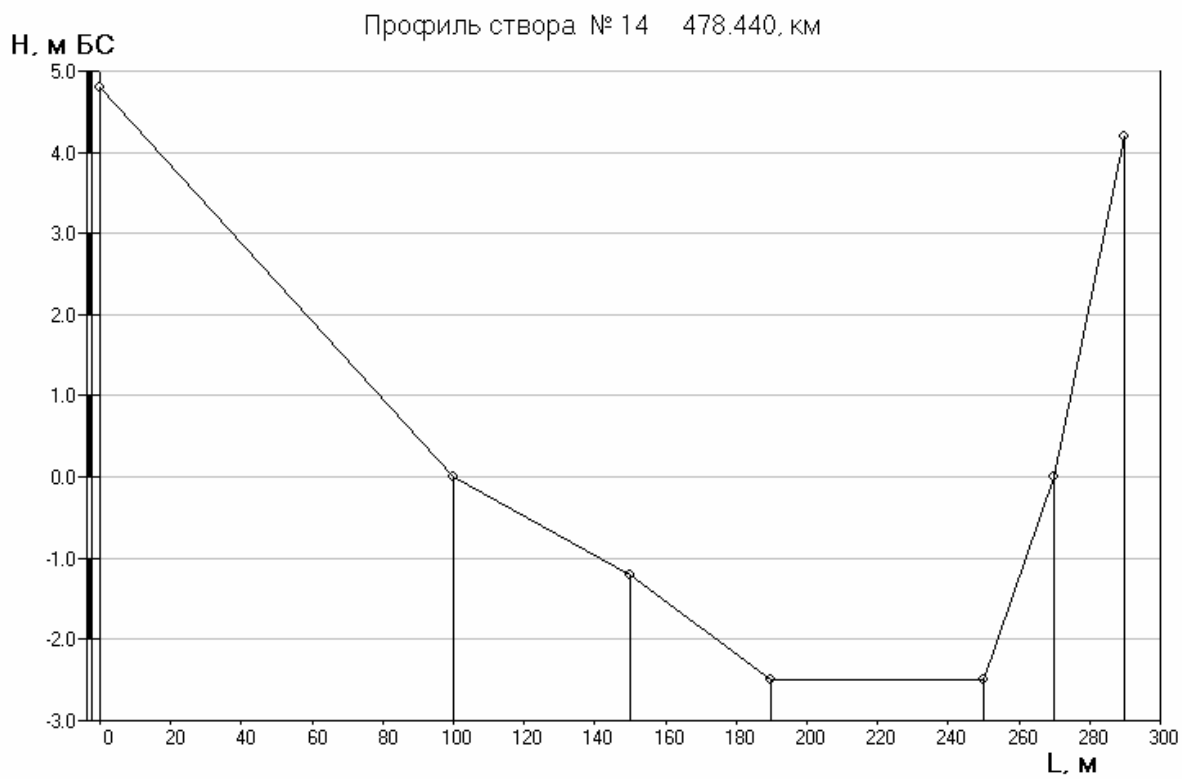
2.2.11 – 11 (477,750)



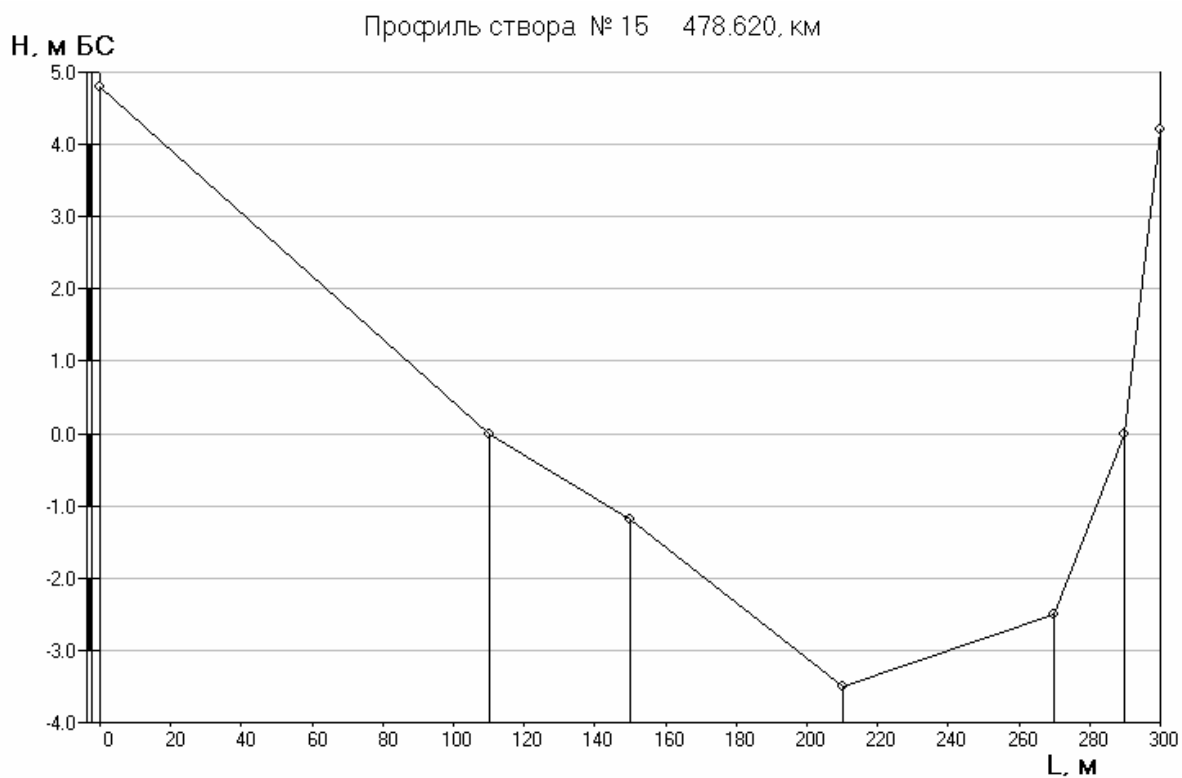
2.2.12 – 12 (478)



2.2.13 – 13 (478,210)



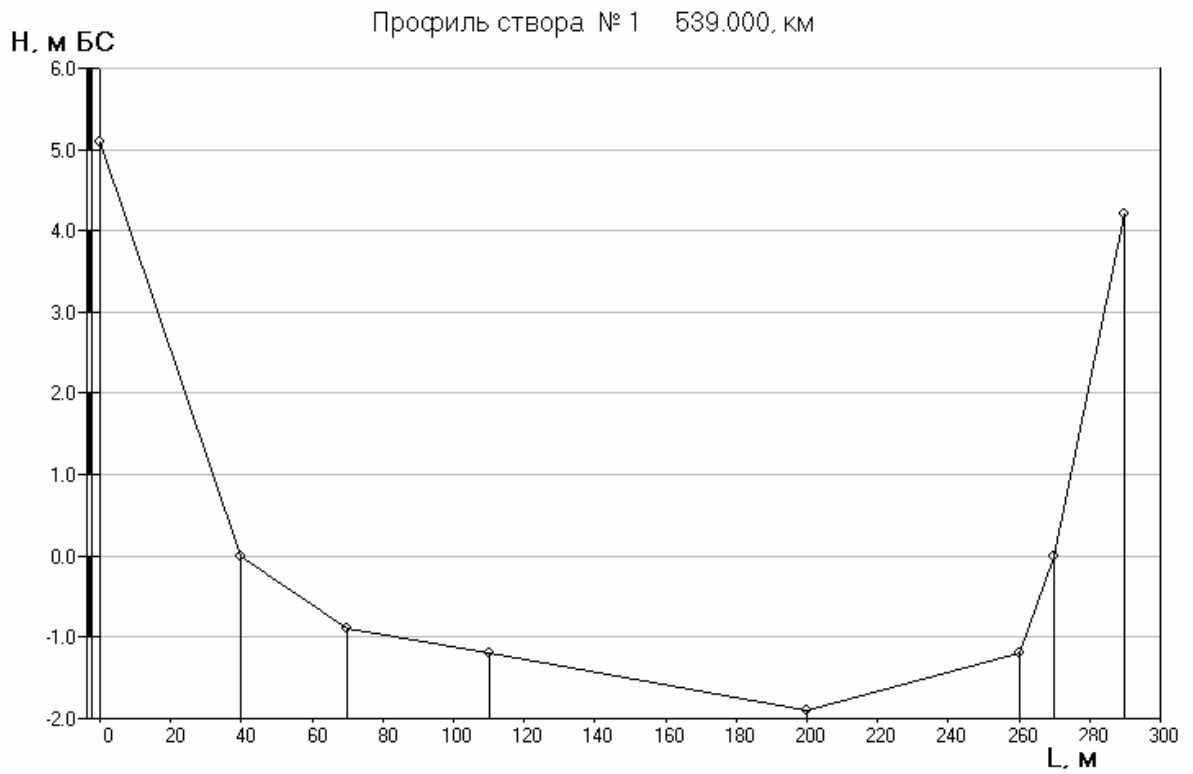
2.2.14 – 14 (478,440)



2.2.15 – 15 (478,620)

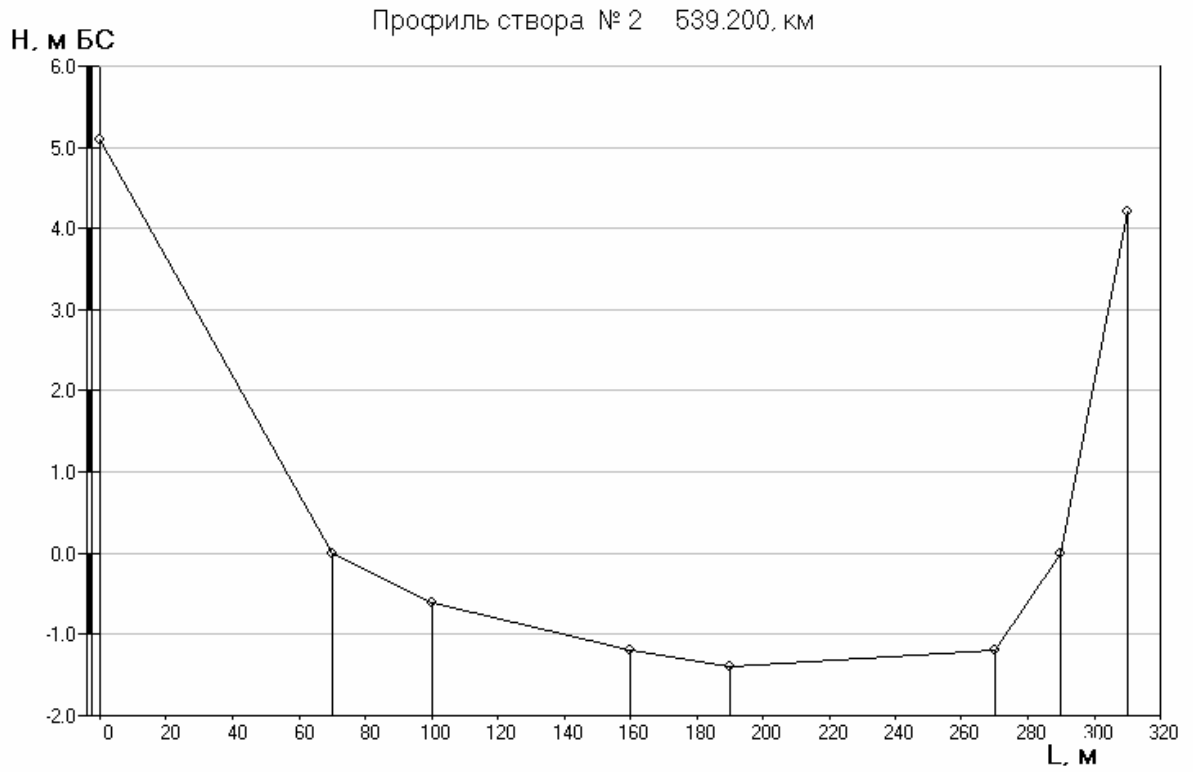
539-541

(. 2.3.1-2.3.10):

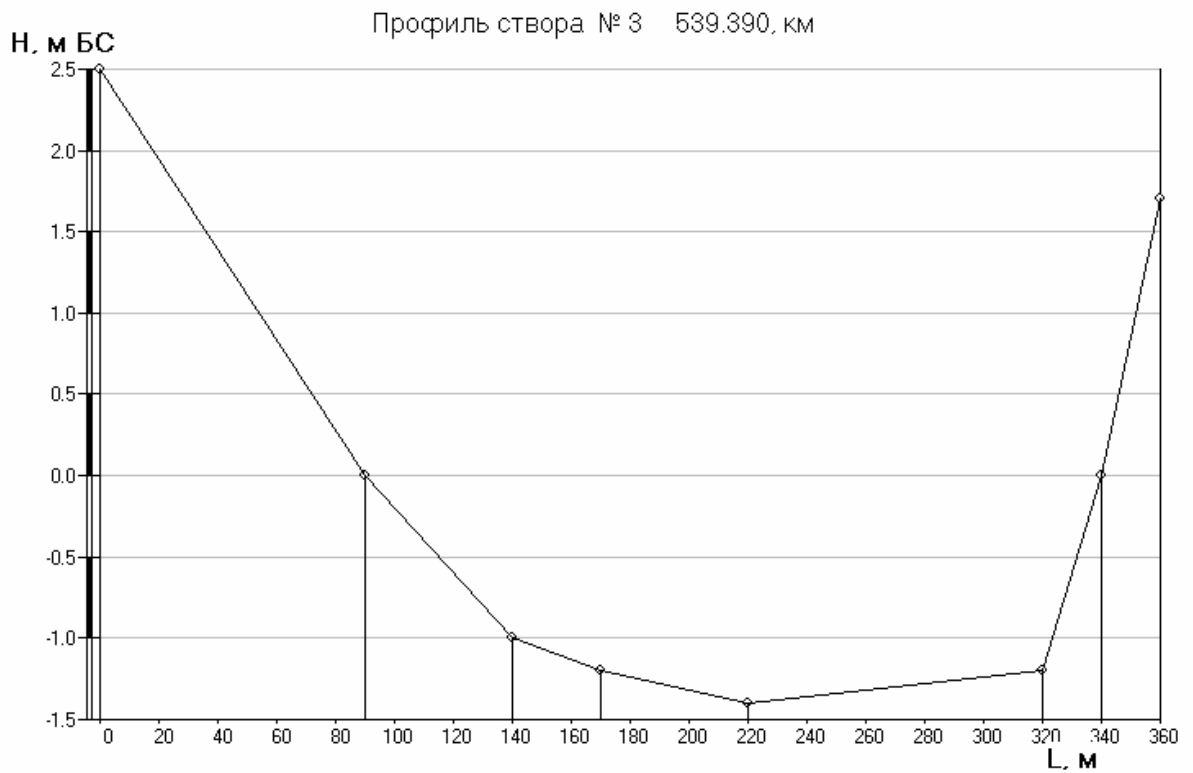


2.3.1 –

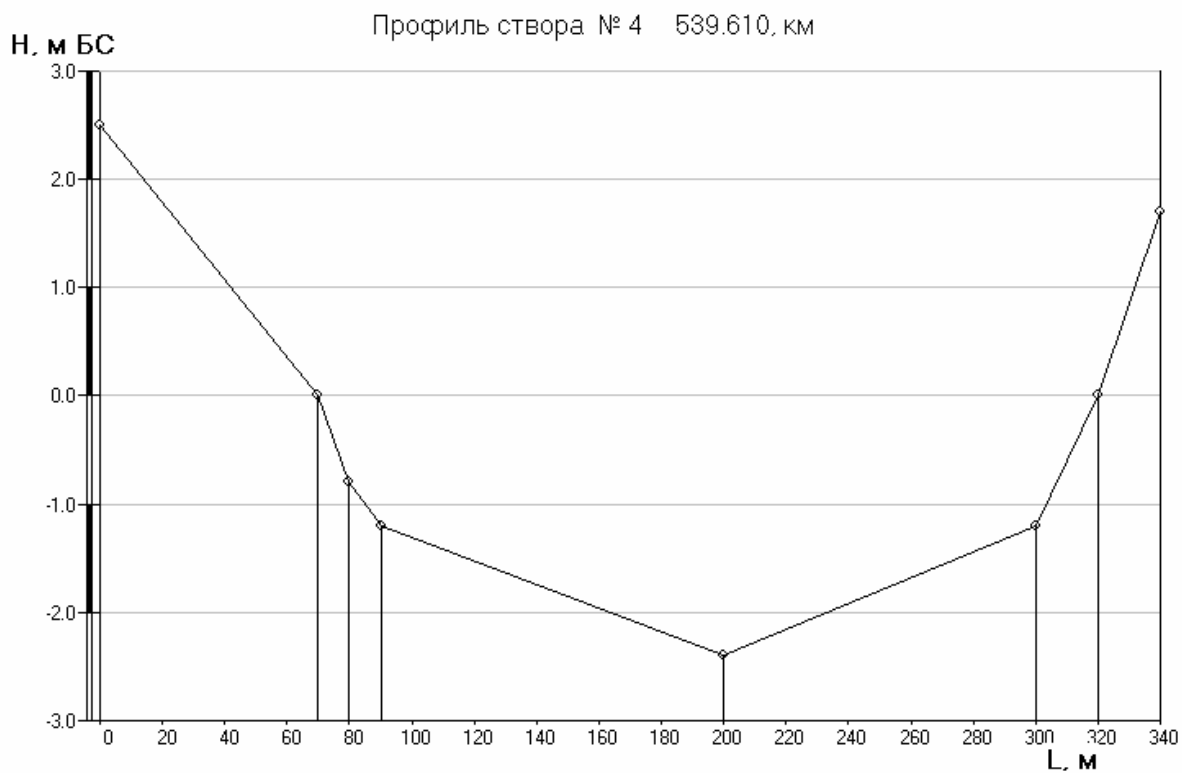
1 (539)



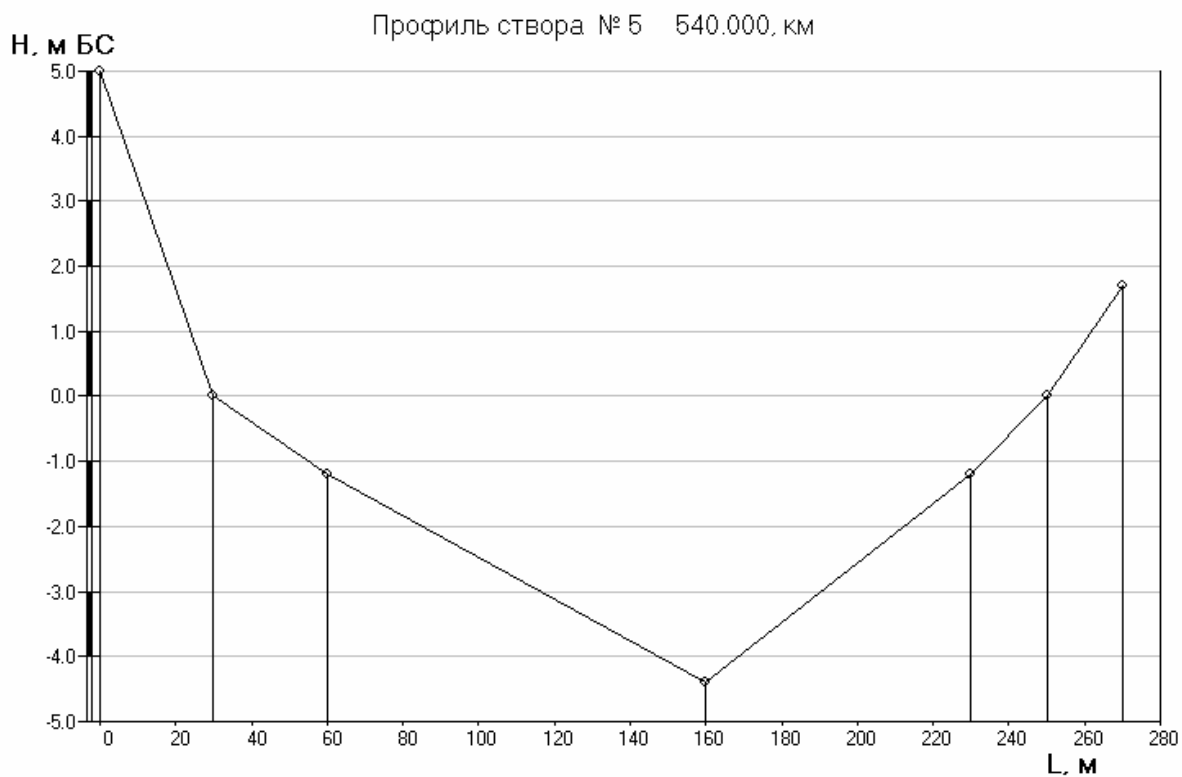
2.3.2 – 2 (539,200)



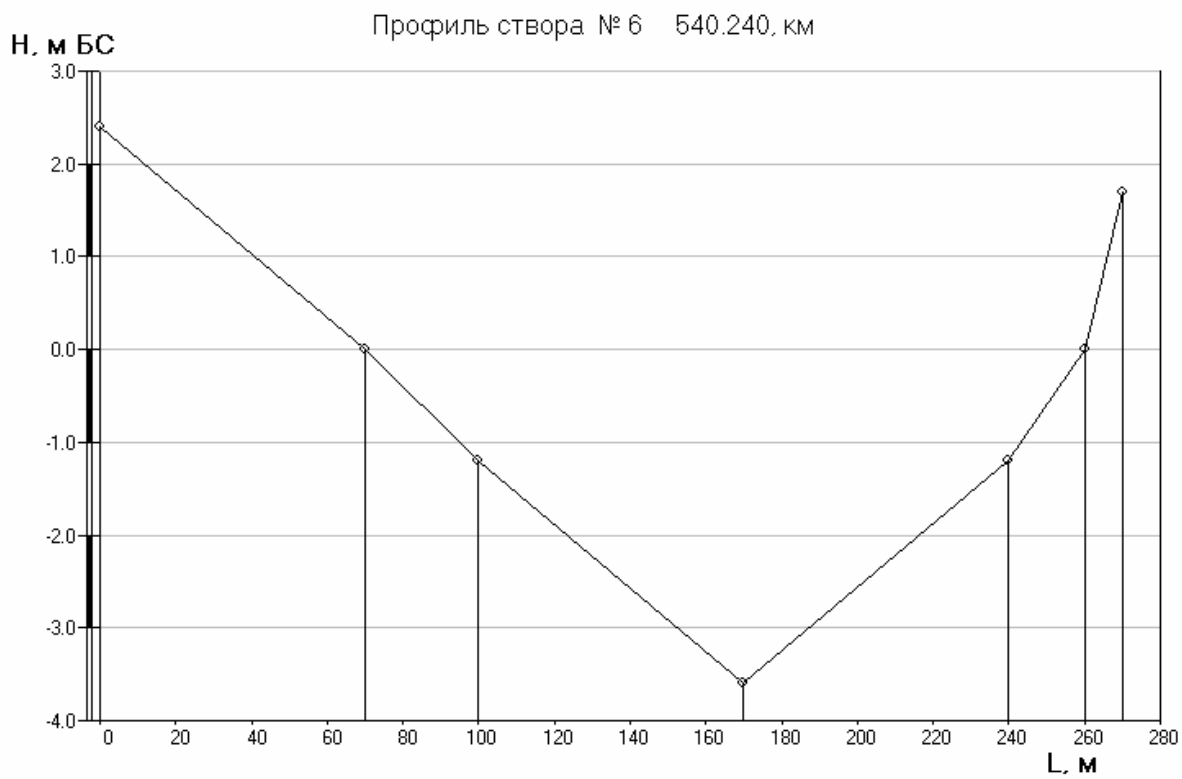
2.3.3 – 3 (539,390)



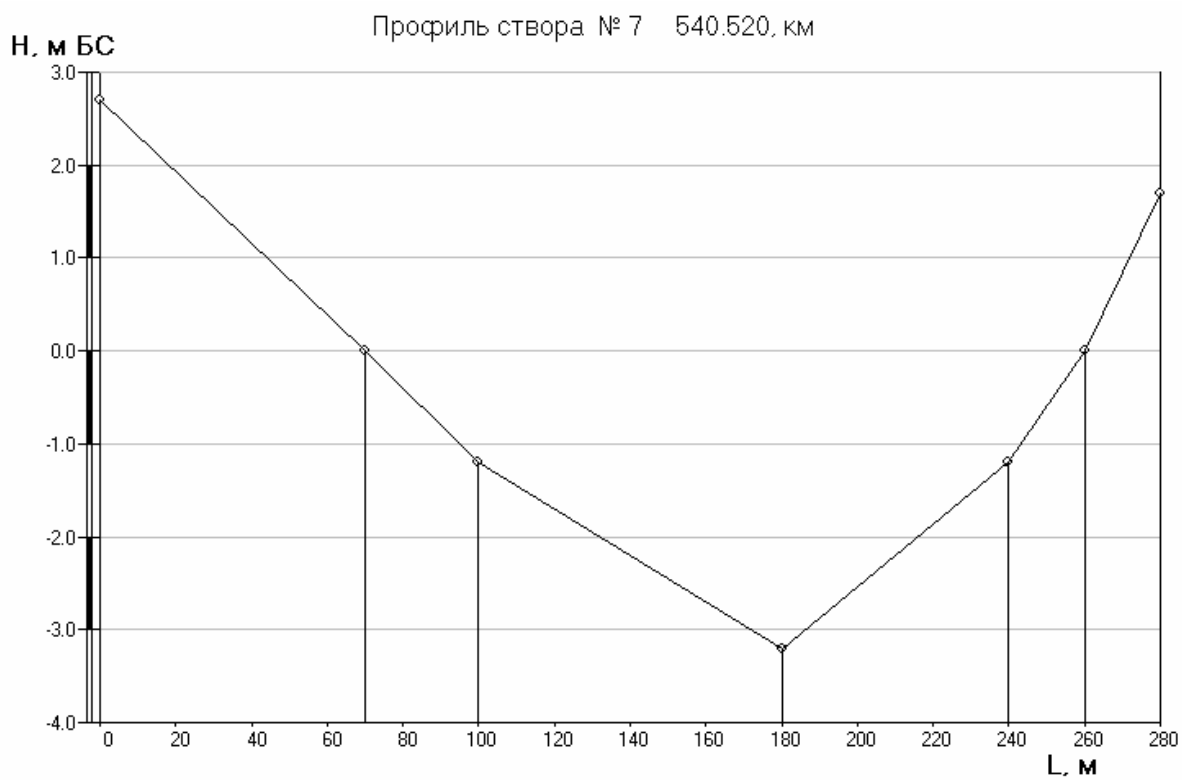
2.3.4 – 4 (539,610)



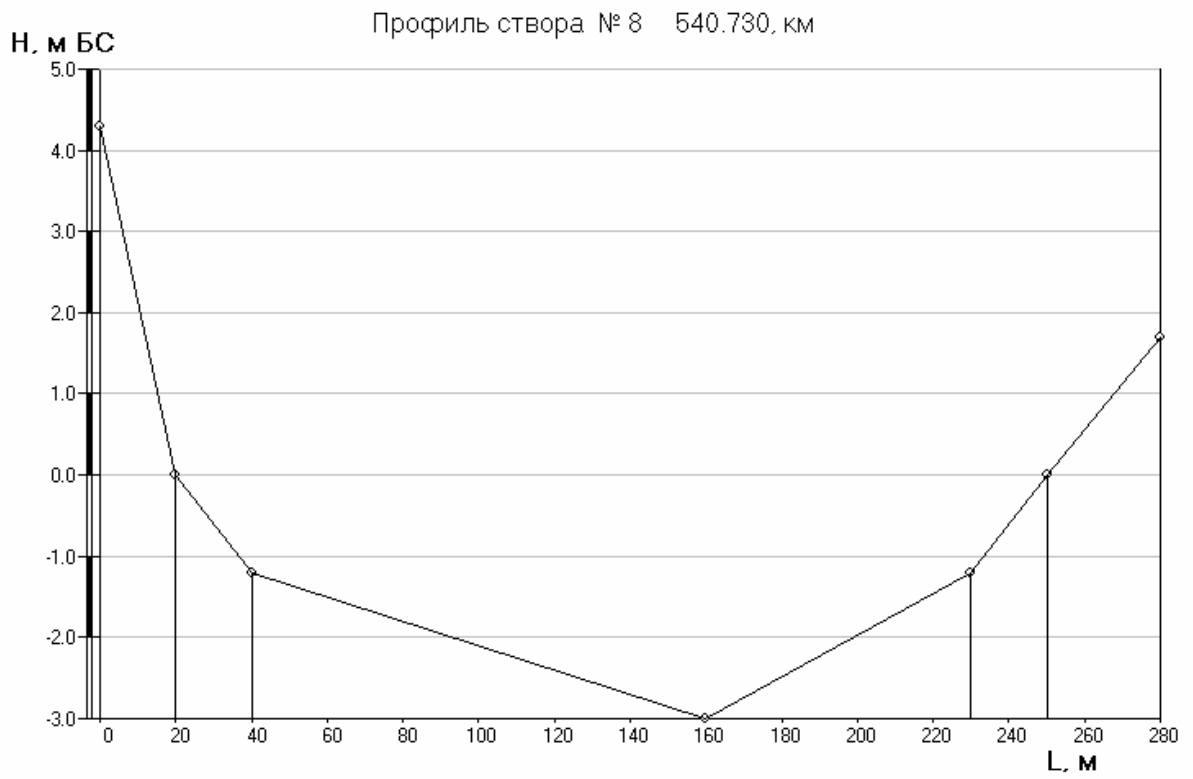
2.3.5 – 5 (540)



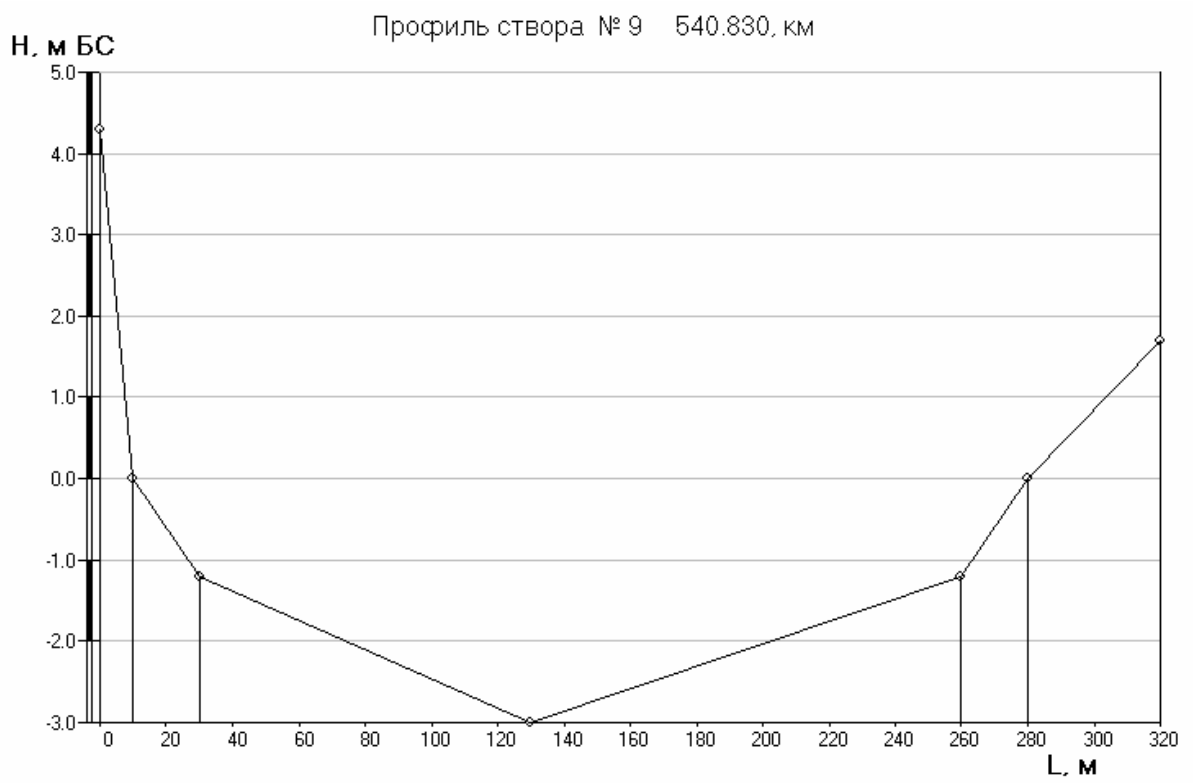
2.3.6 – 6 (540,240)



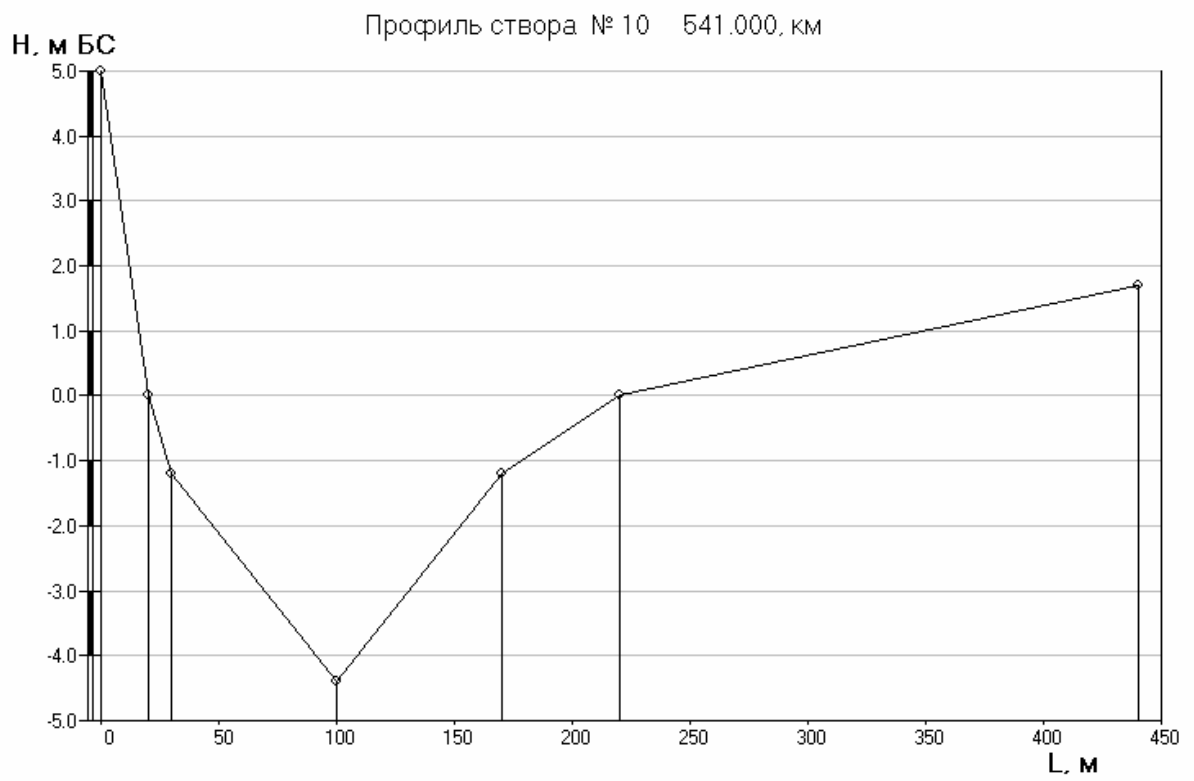
2.3.7 – 7 (540,520)



2.3.8 – 8 (540,730)



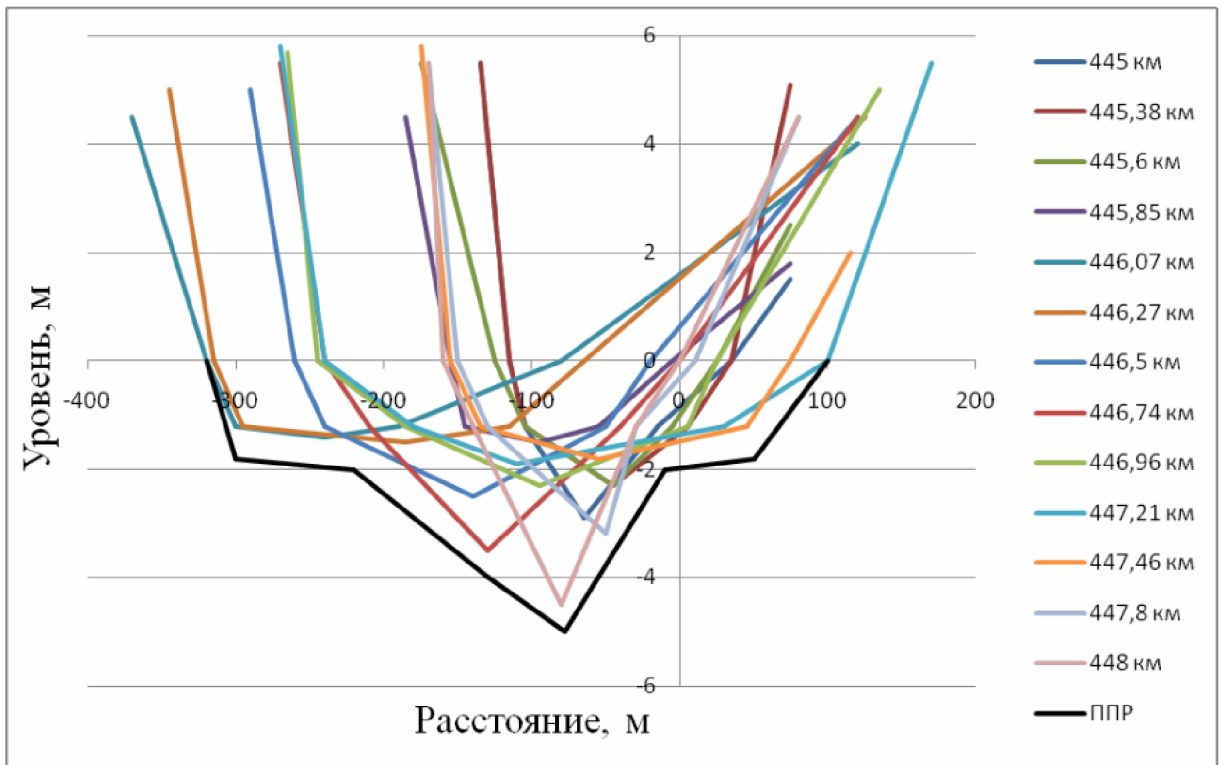
2.3.9 – 9 (540,830)



2.3.10 – 10 (541)

2.4

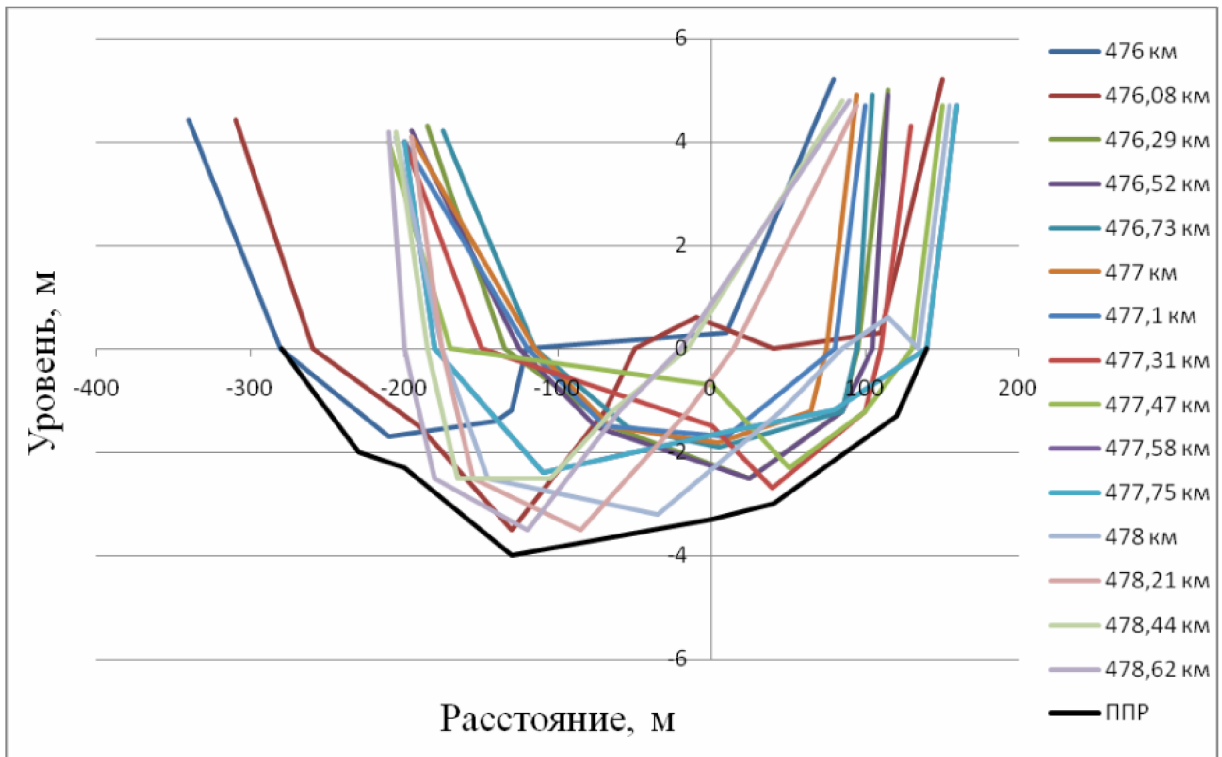
(. 2.4.1 -2.4.3):



2.4.1 –

445-

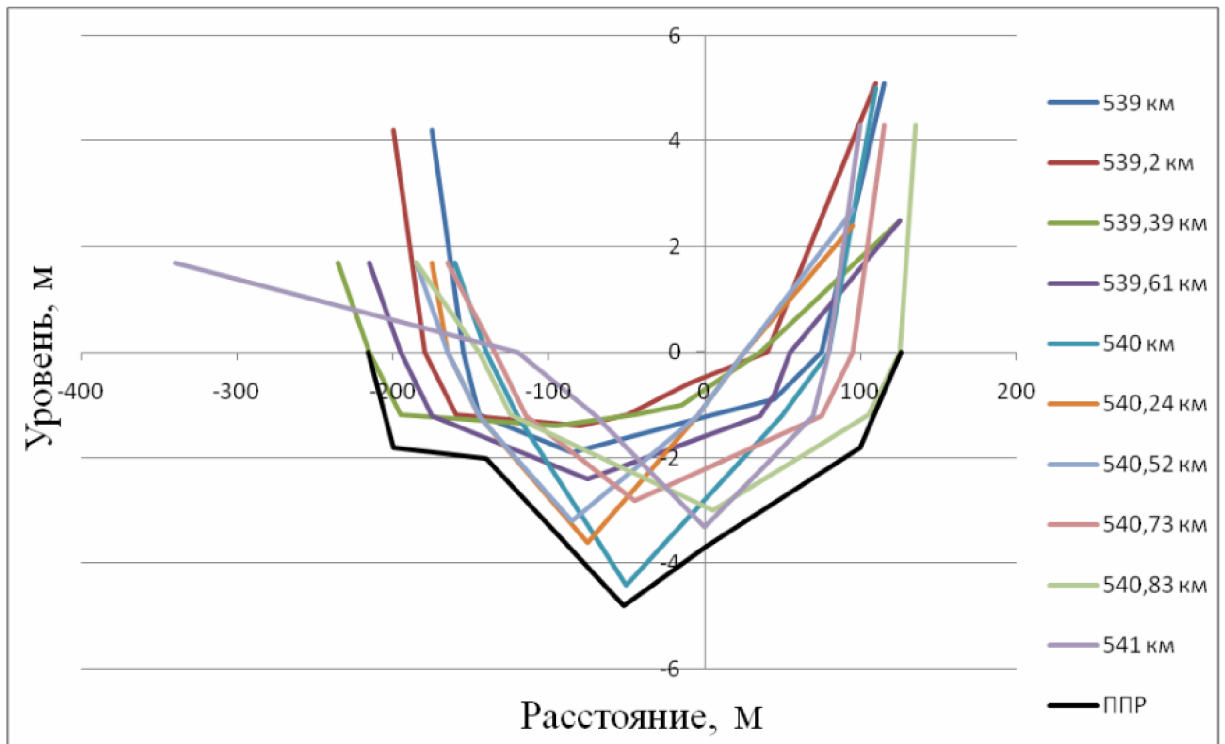
448



2.4.2 –

476 -

478



2.4.3 –

539-

541

3

$$Q=f(H)$$

-

:

$$F, \quad ^2$$

, .

:

$$(3.1)$$

h -

();

F -

(²);

B -

().

,

(

)

:

$$C = \frac{R^{\frac{1}{6}}}{n} \quad (3.2)$$

C -

;

n -

;

R -

().

:

$$Q = F \times C \times \sqrt{R \times l} \quad (3.3)$$

Q -

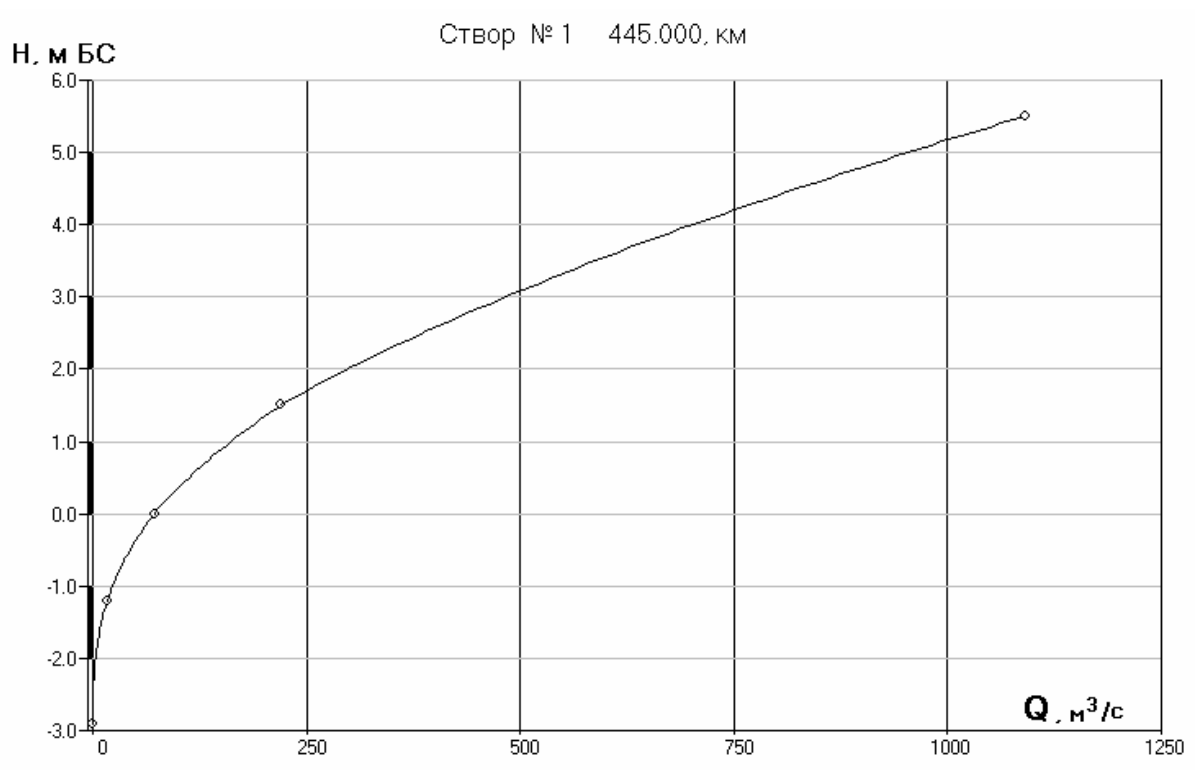
(^{3/});

F – (²);
 – ;
 R – ();
 i – .
 , H Q.
 H.
 Q=f(H).
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 0,03.

3.1 Q=f(H) 445-448

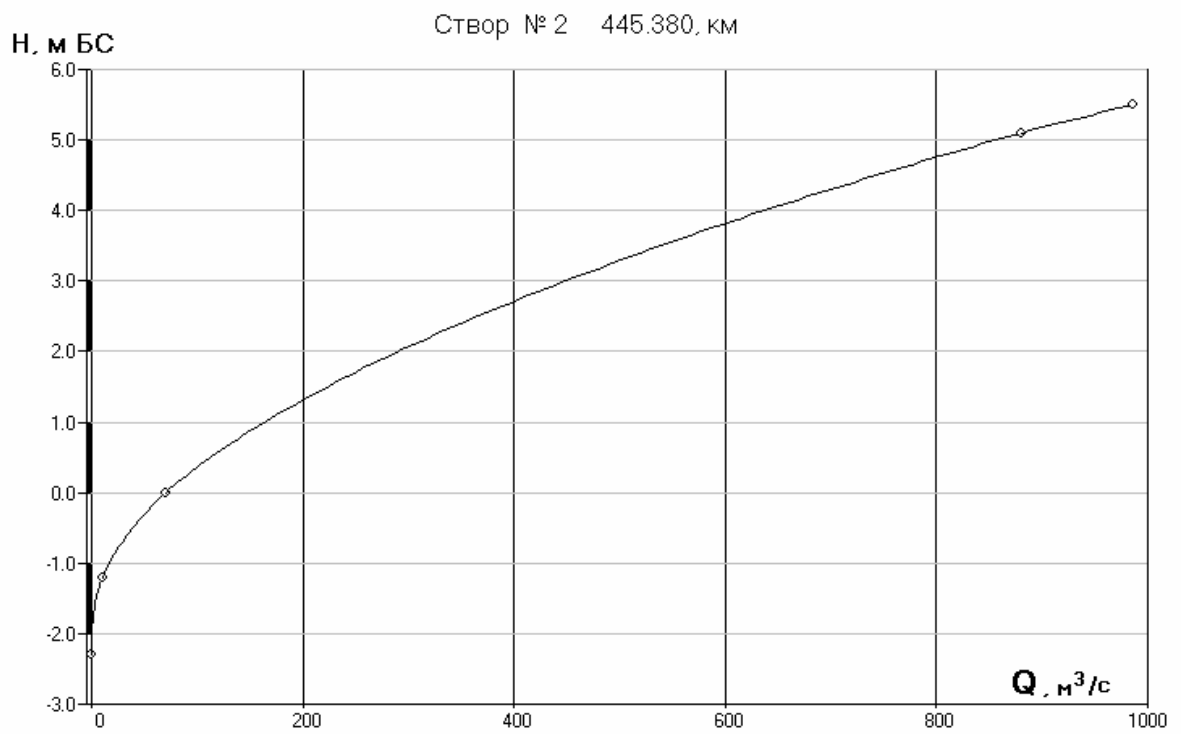
Q=f(H) 445-448 (.

3.1.1-3.1.13):



3.1.1 – 1 (445

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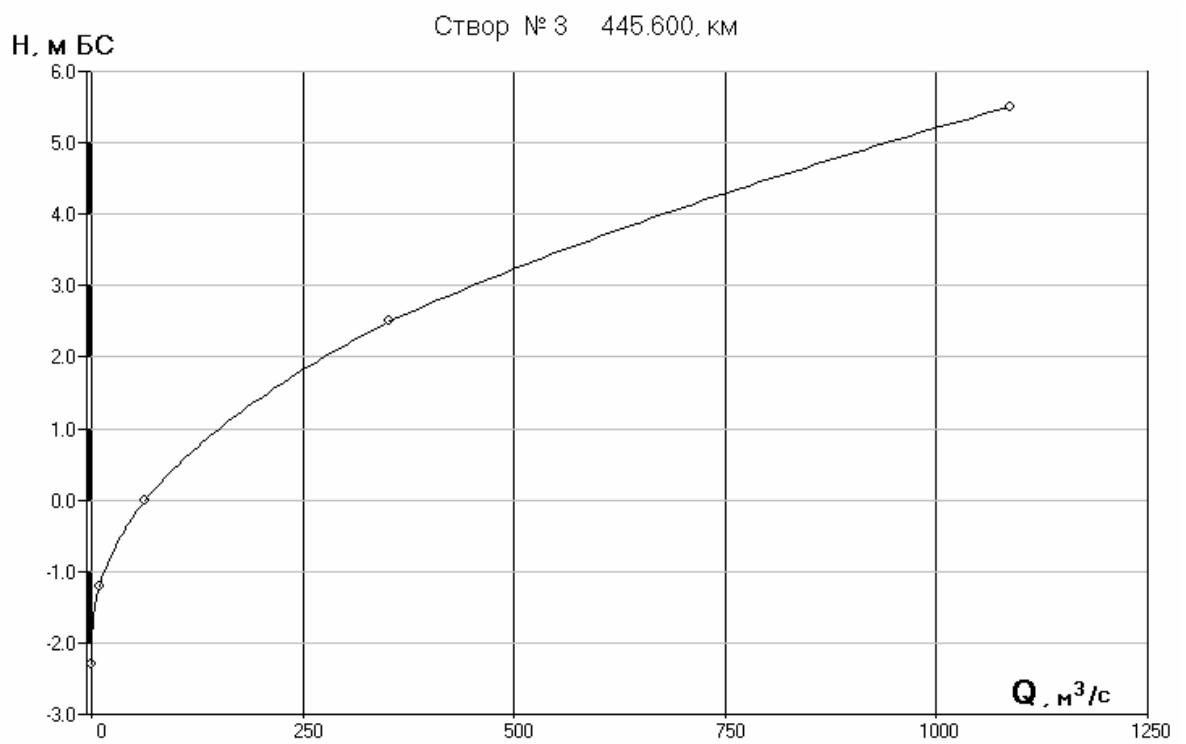


3.1.2 –

2

(445,380

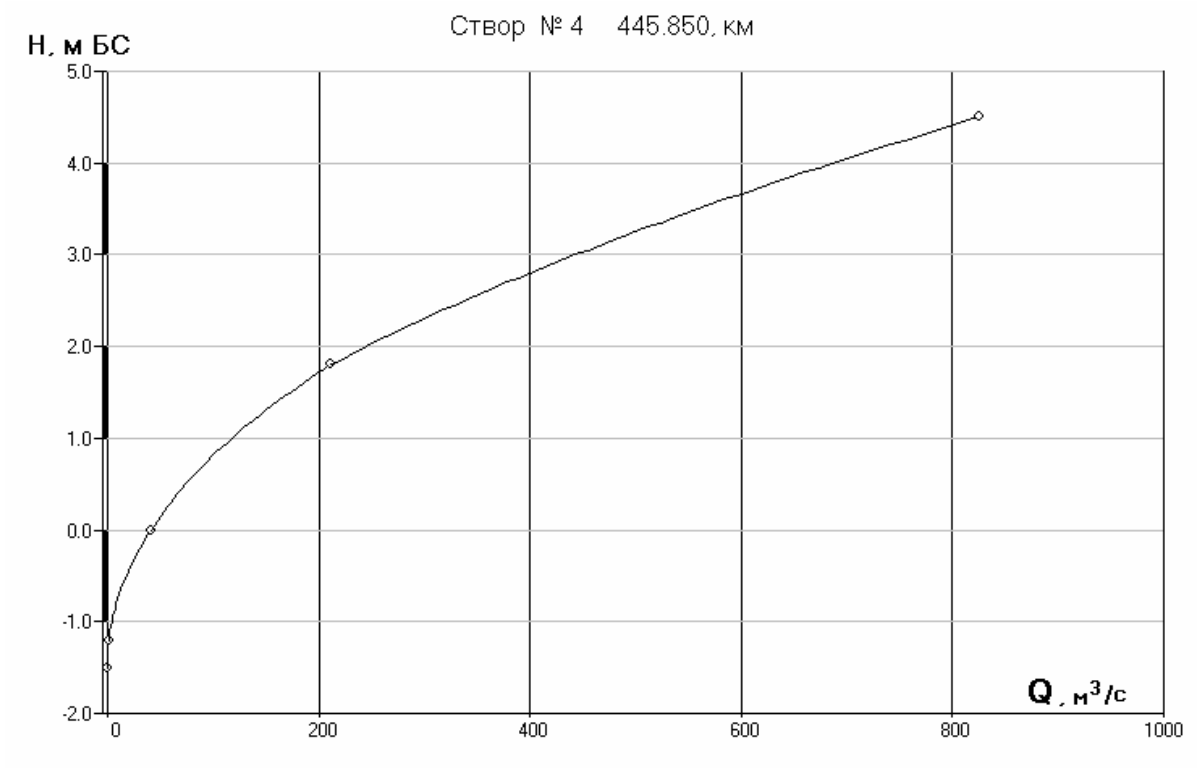
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3.1.3 –

3

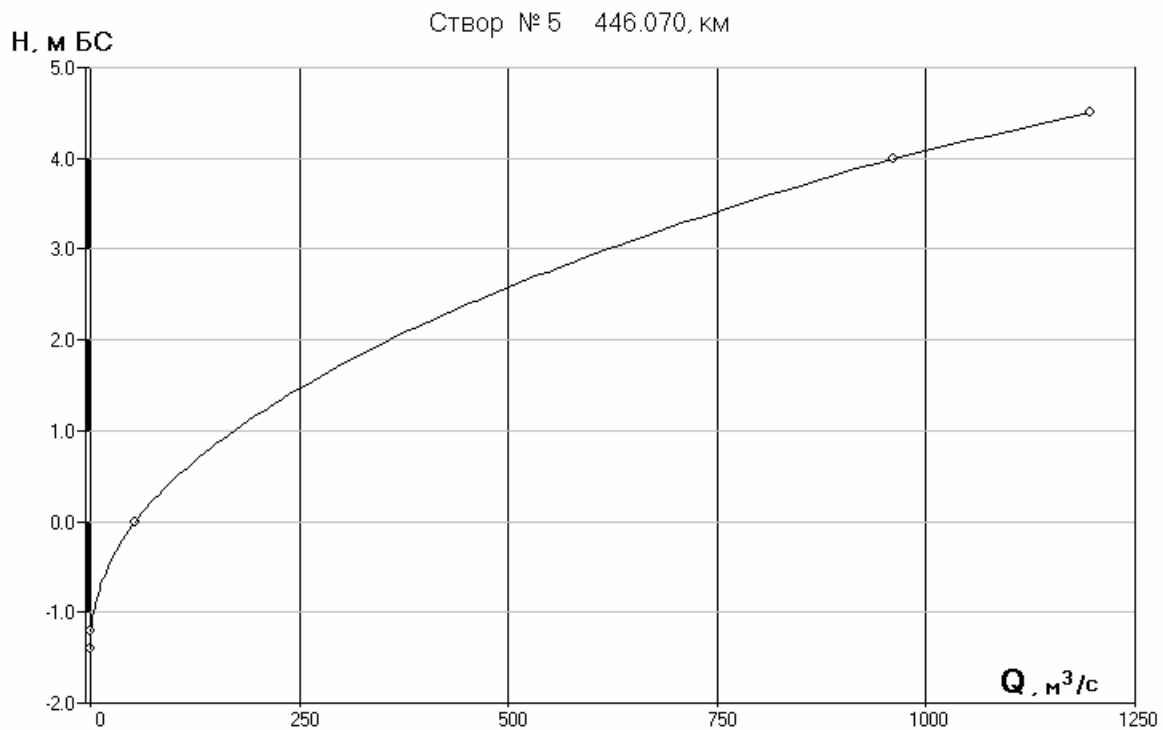
(445,6)



3.1.4 –

4

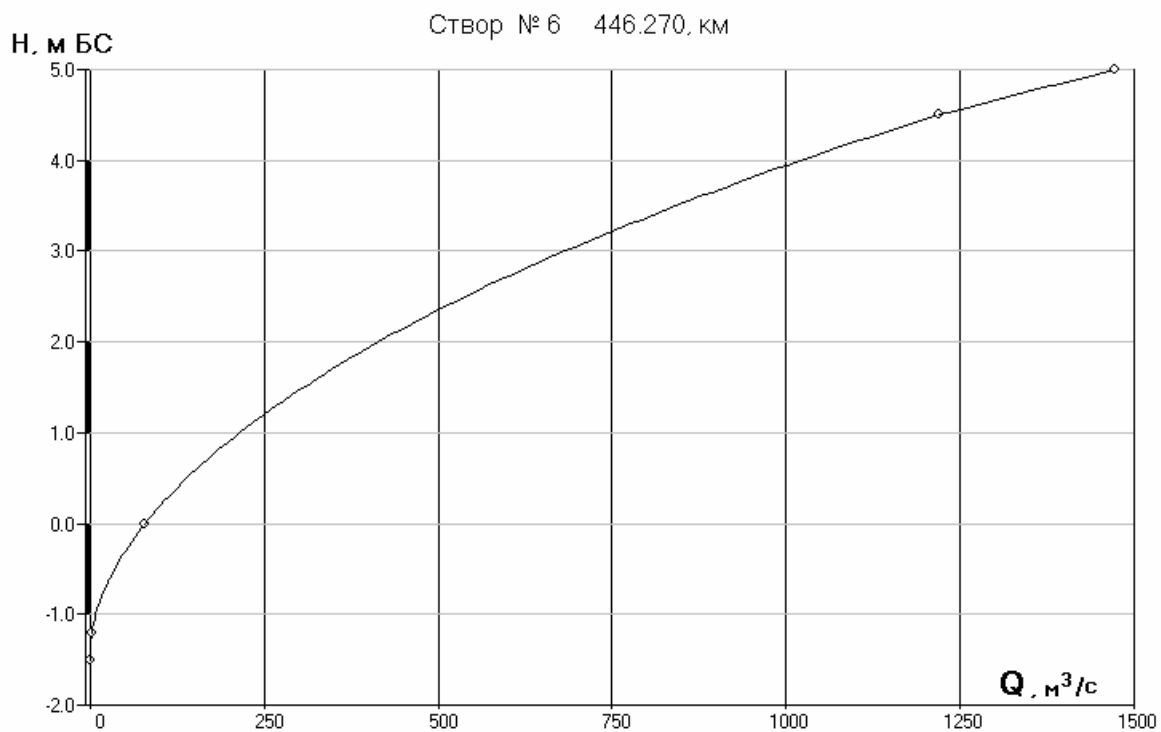
(445,850)



3.1.5 –

5

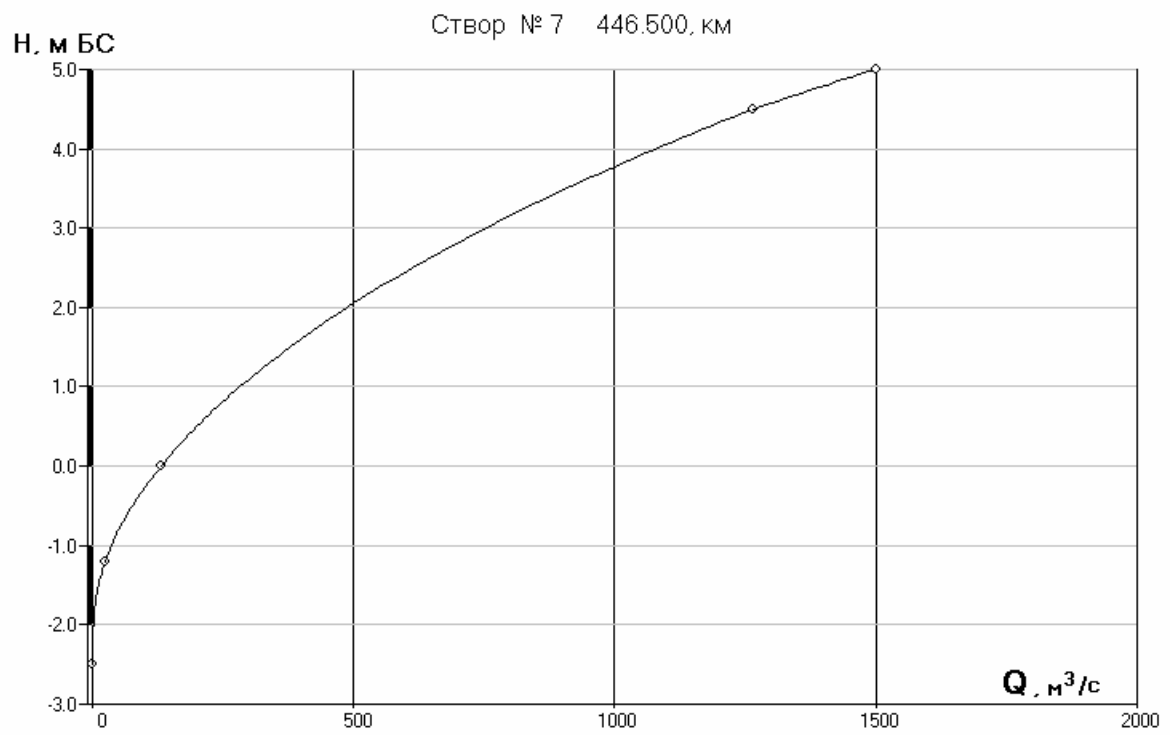
(446,070)



3.1.6 –

6

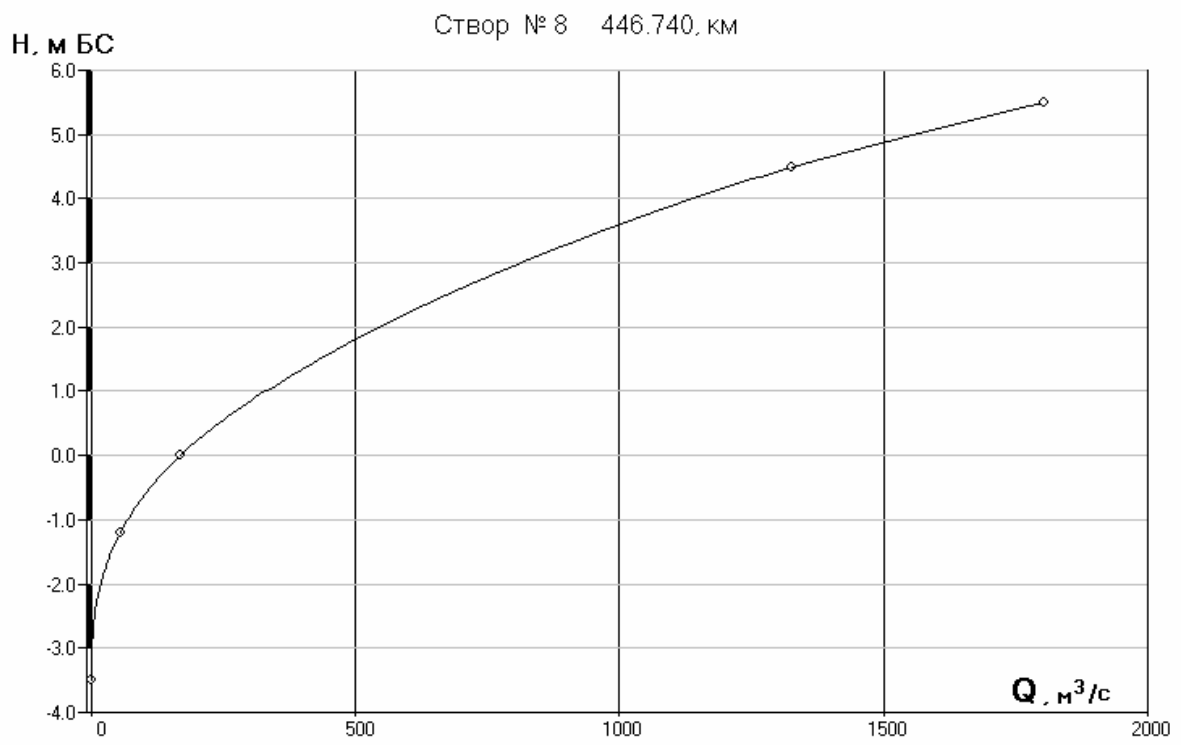
(446,270)



3.1.7 –

7

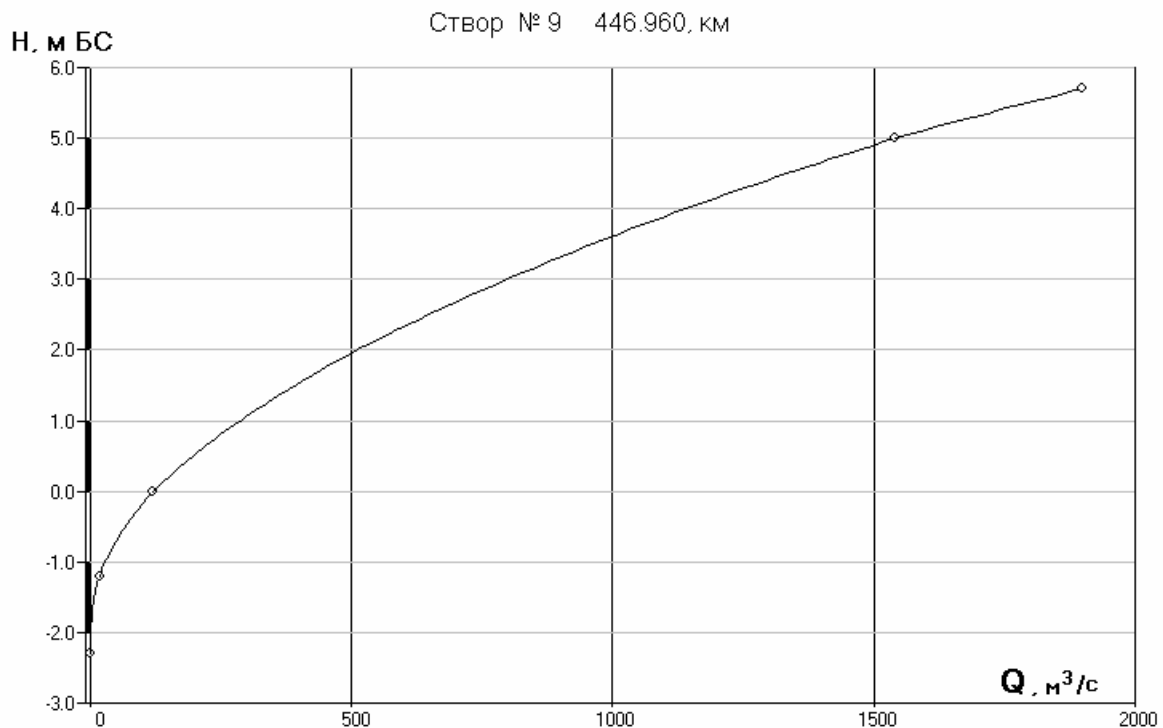
(446,500)



3.1.8 –

8

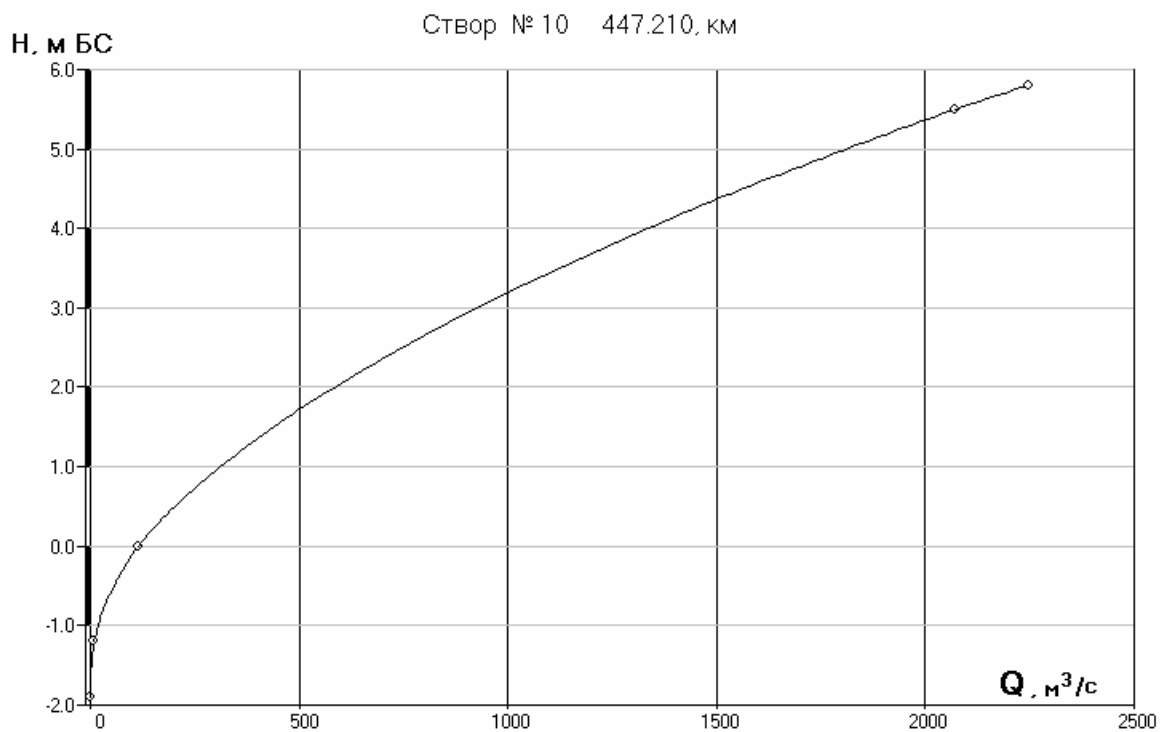
(446,740)



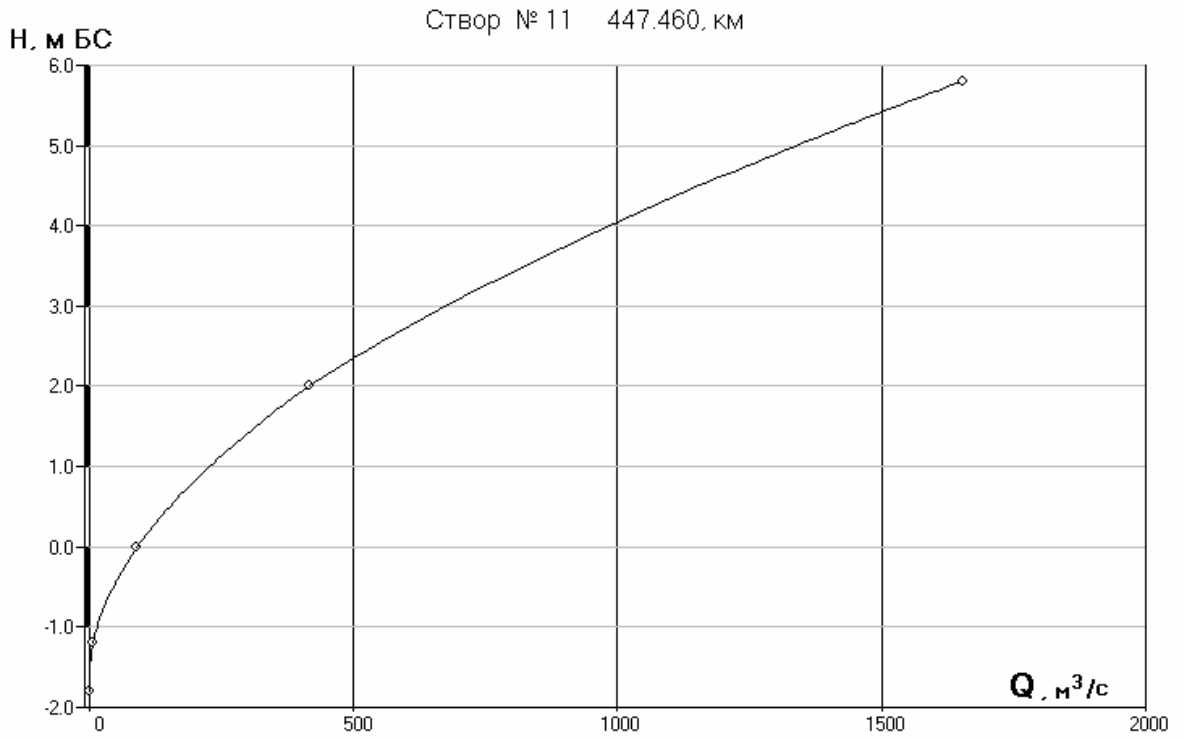
3.1.9 –

9

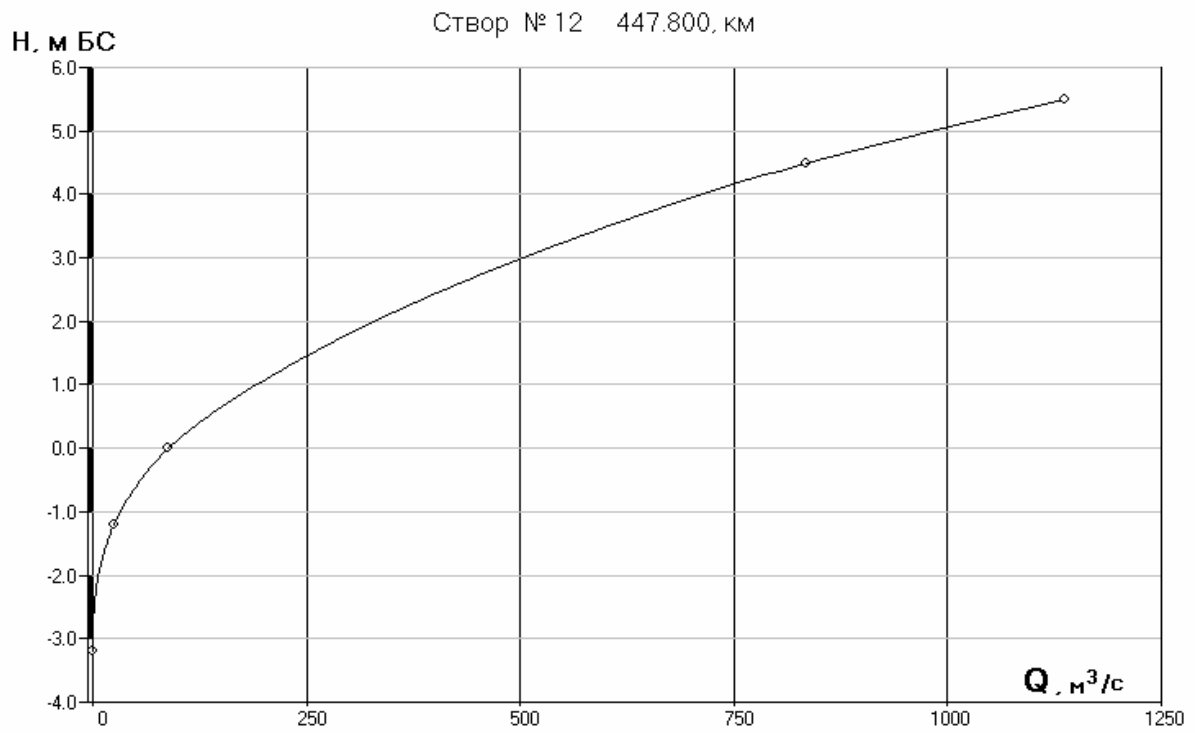
(446,960)



(447,210)



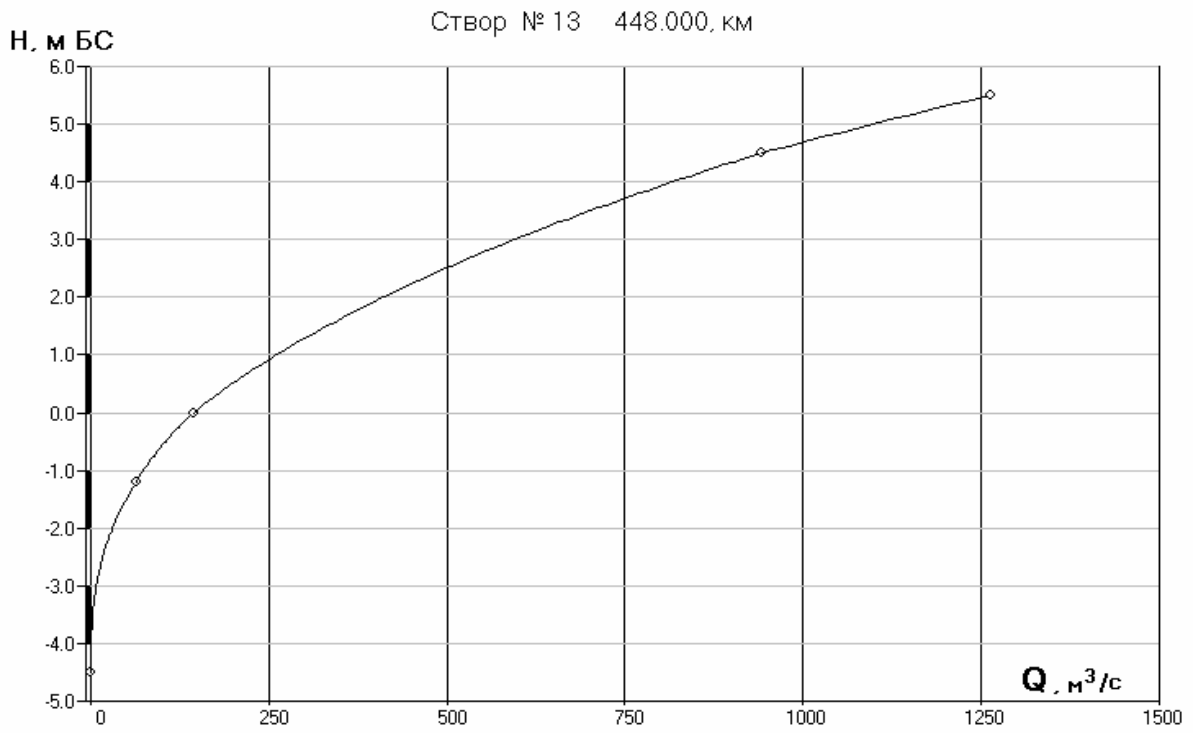
(447,460)



3.1.12 –

12

(447,800)



3.1.13 –

13

(448)

3.2

Q=f(H)

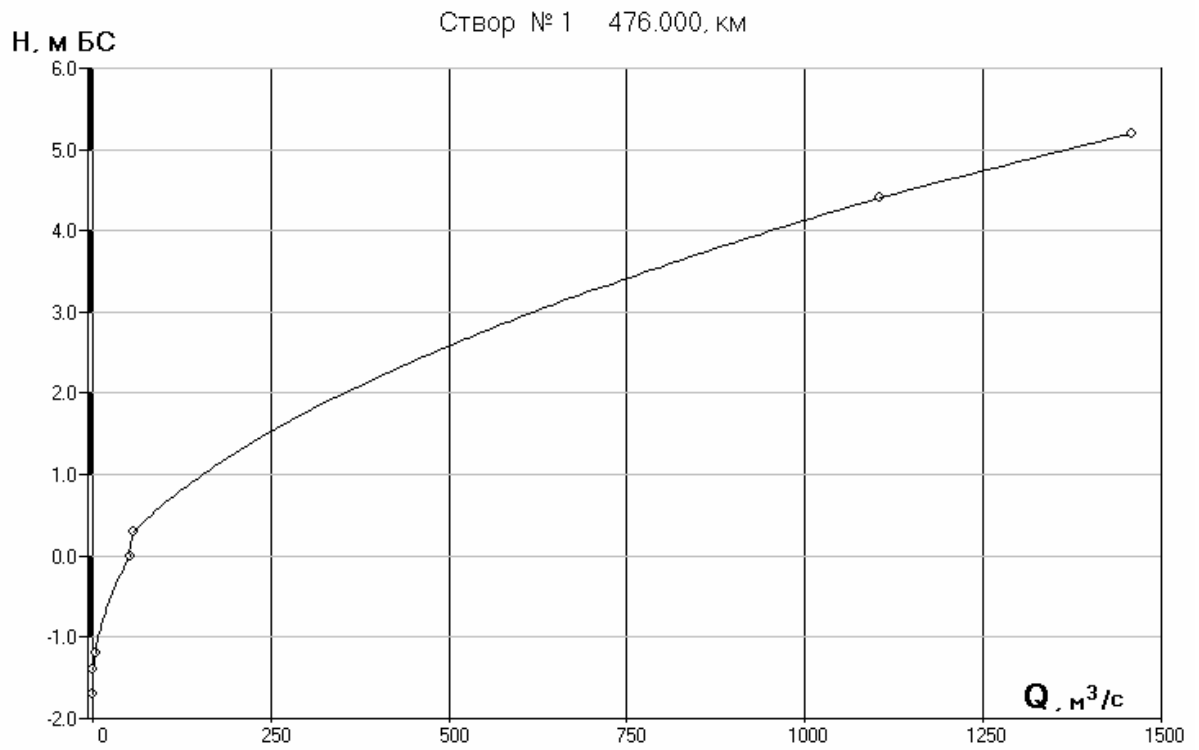
476-478

Q=f(H)

476-478 (.)

3.2.1-

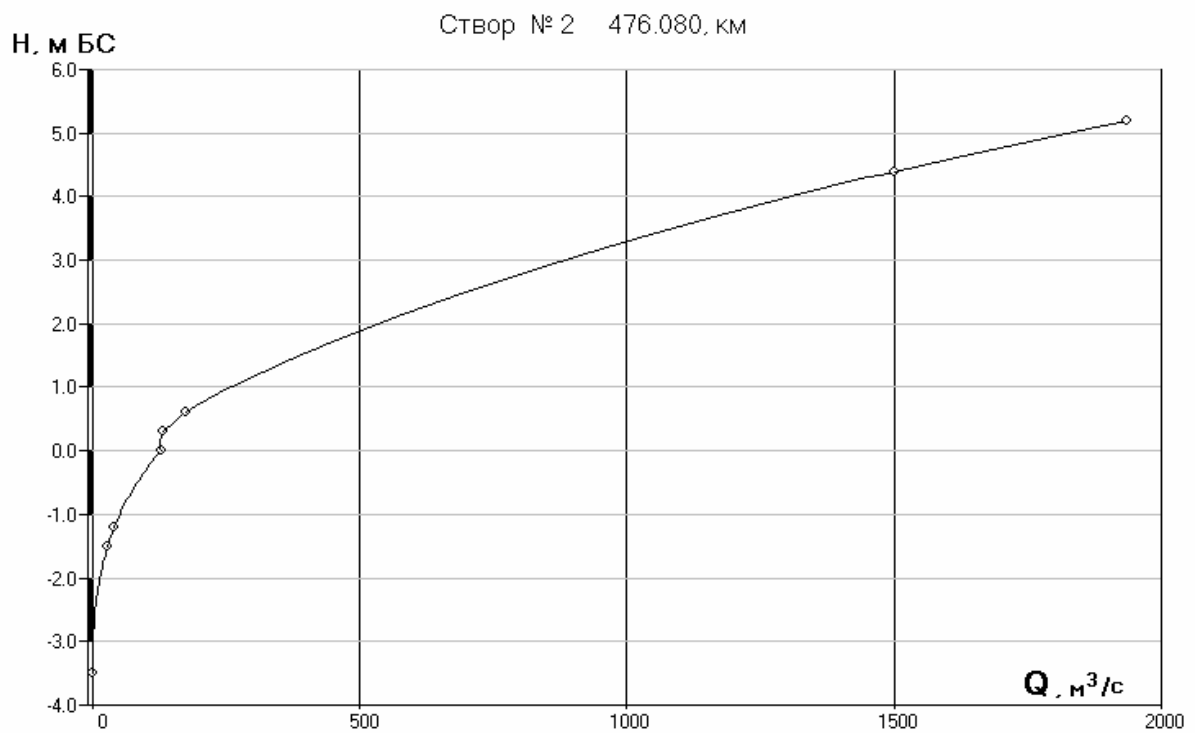
3.2.15):



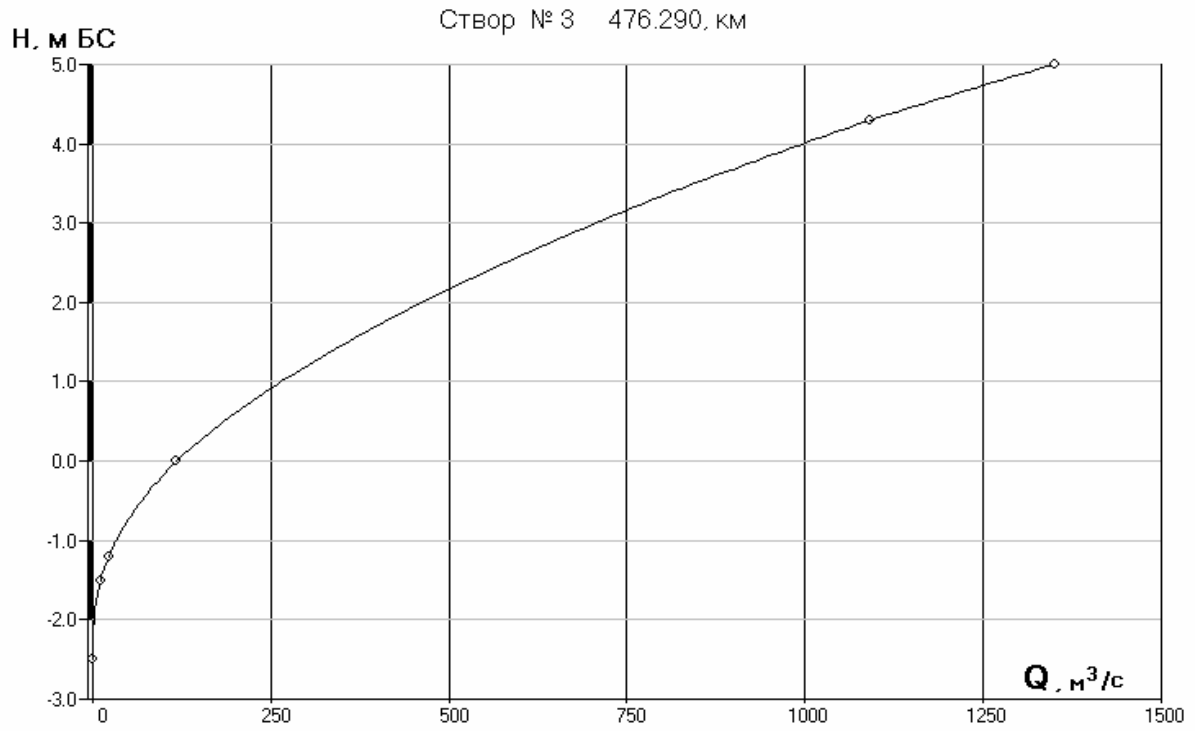
3.2.1 –

1 (476

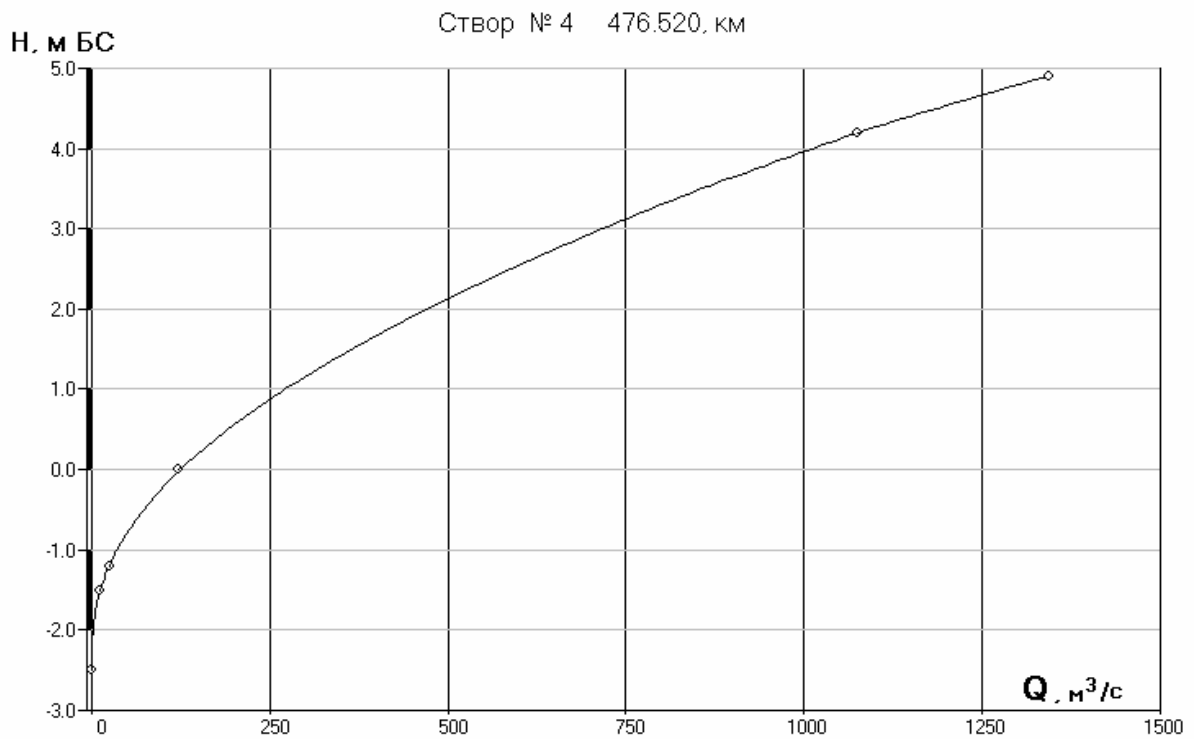
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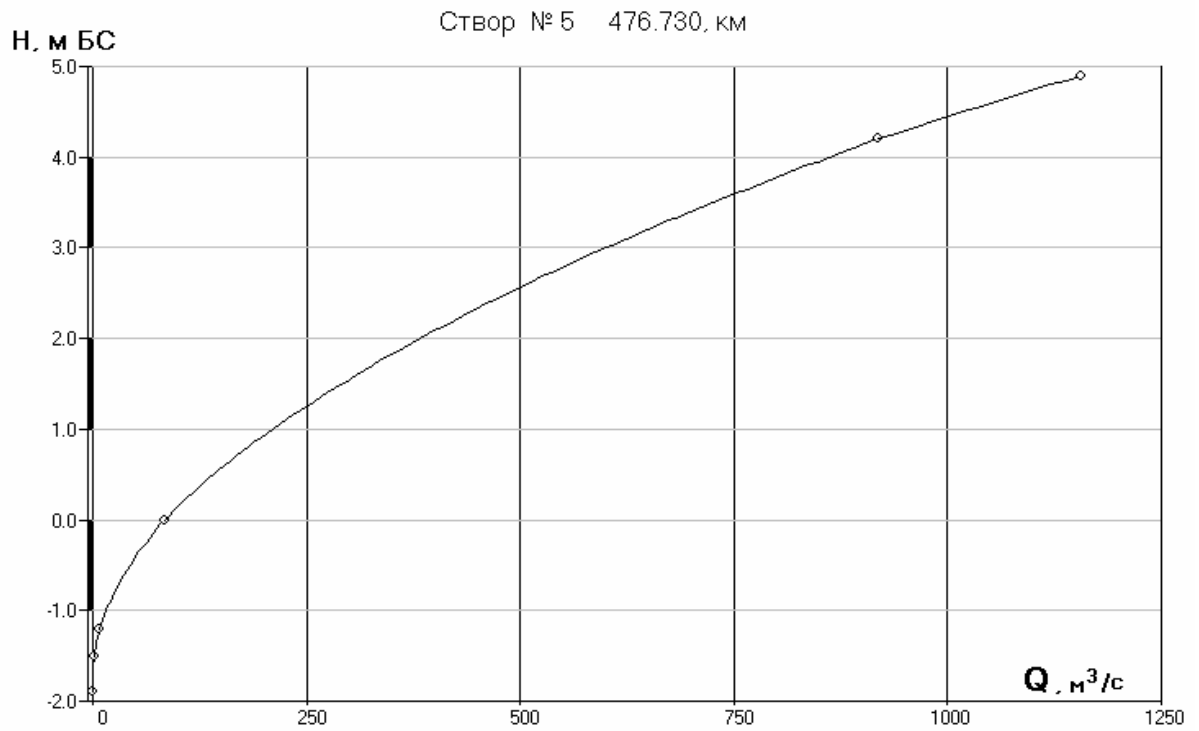
(476,080)



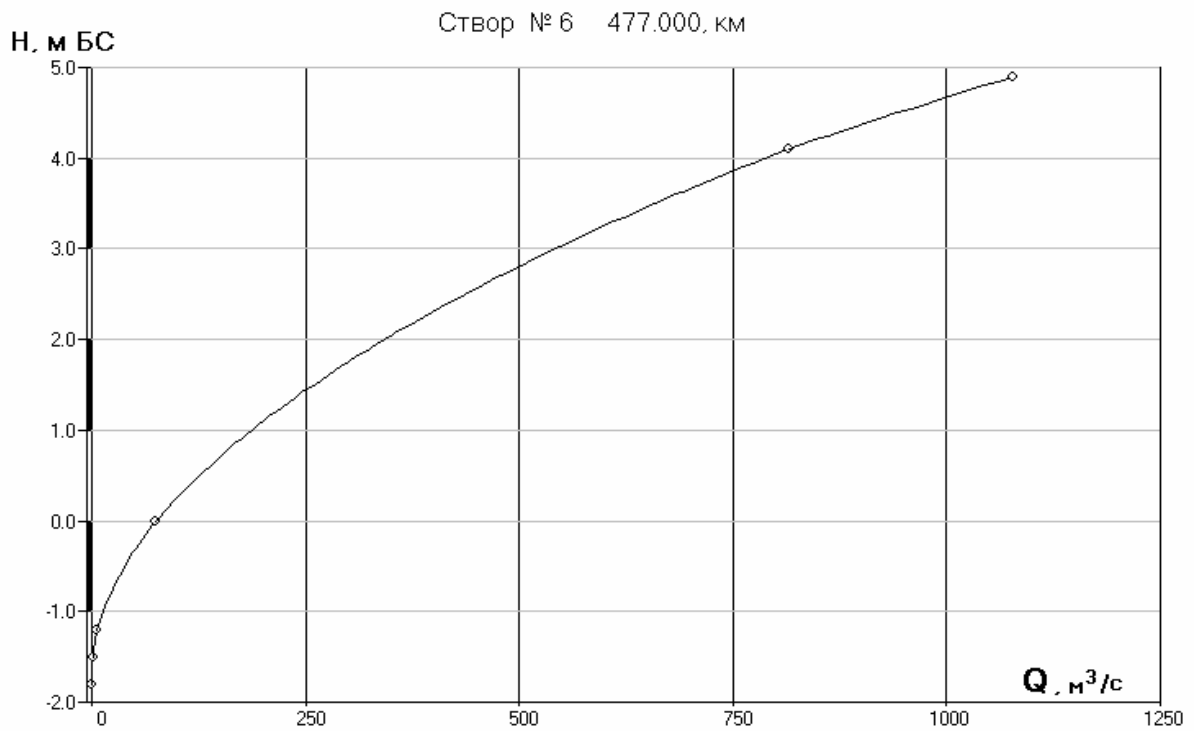
(476,290)



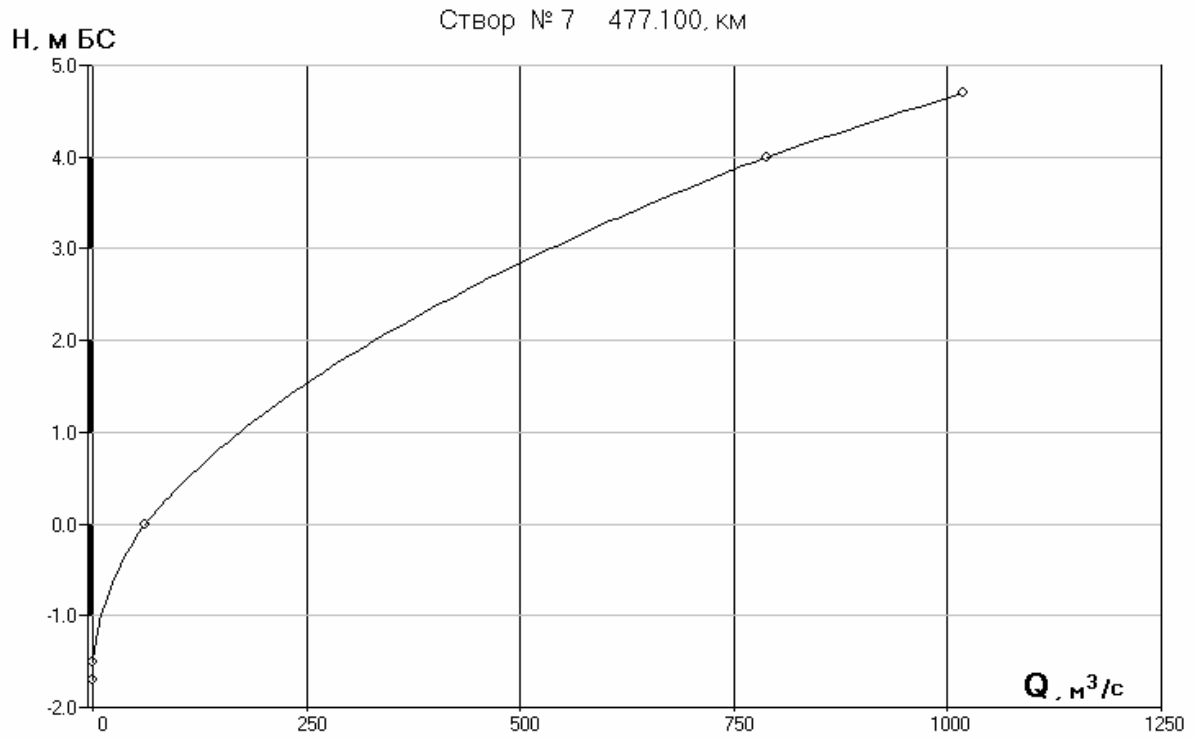
(476,520)



(476,730)



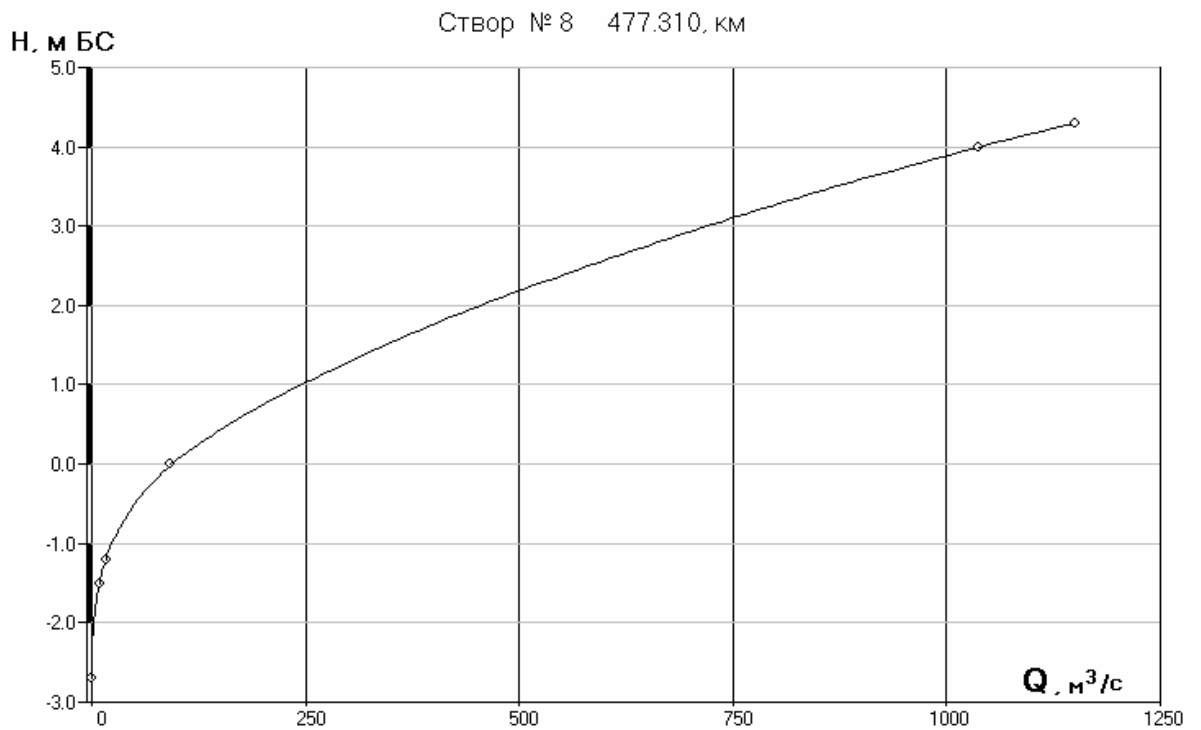
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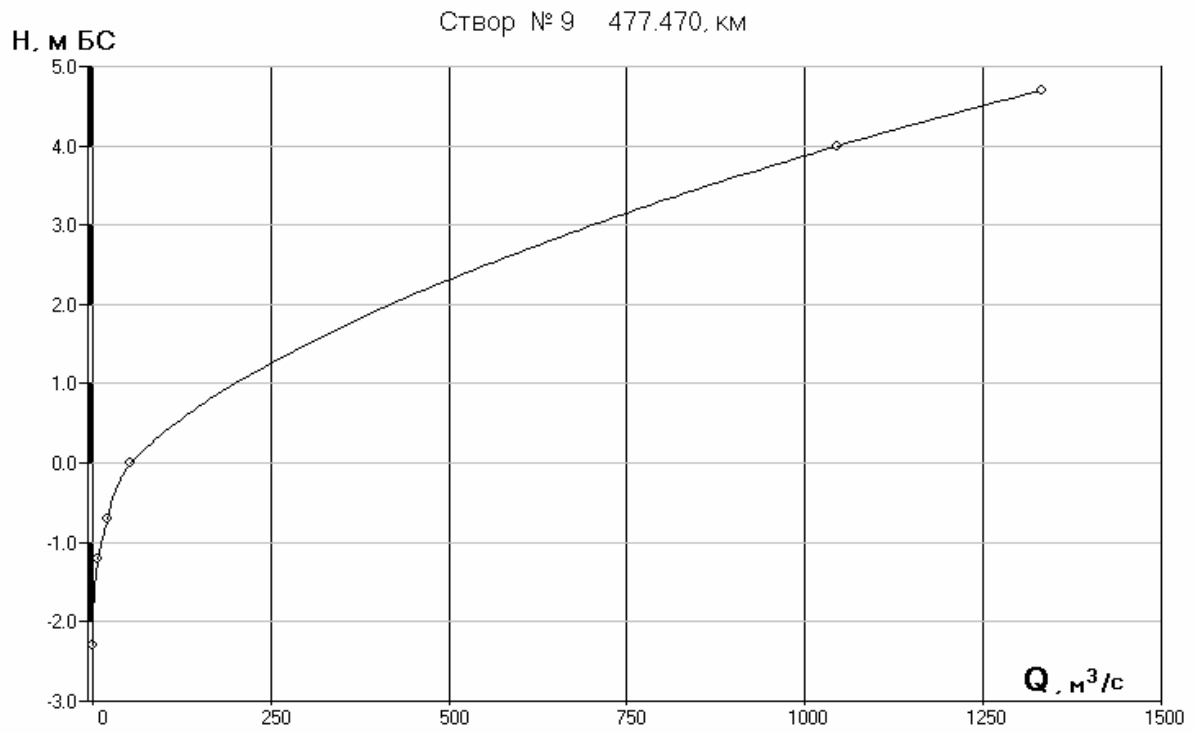
3.2.7 –

7

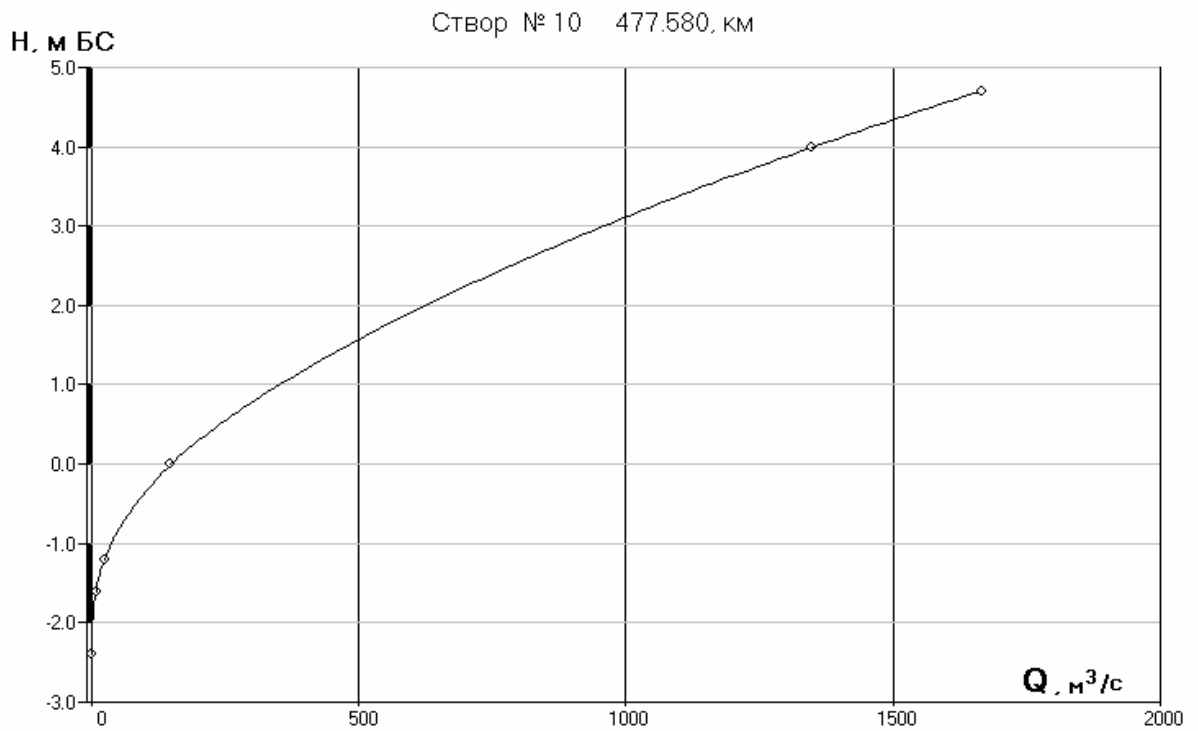
(477,100)



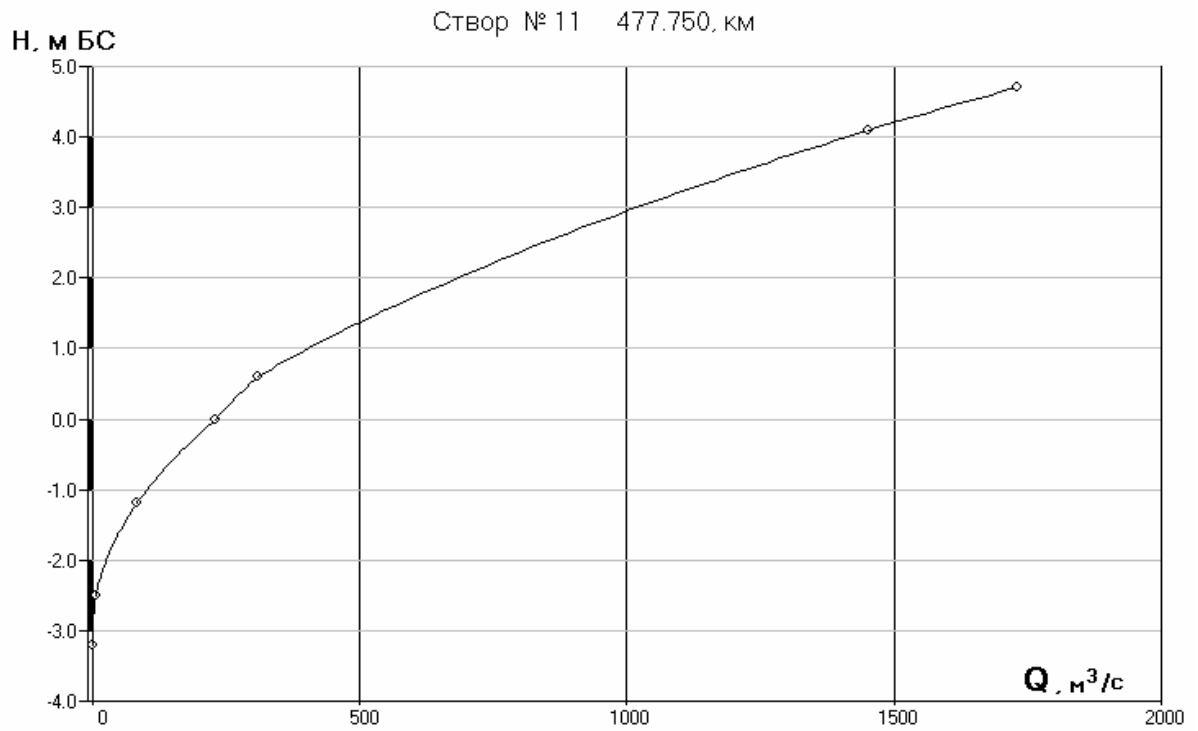
(477,310)



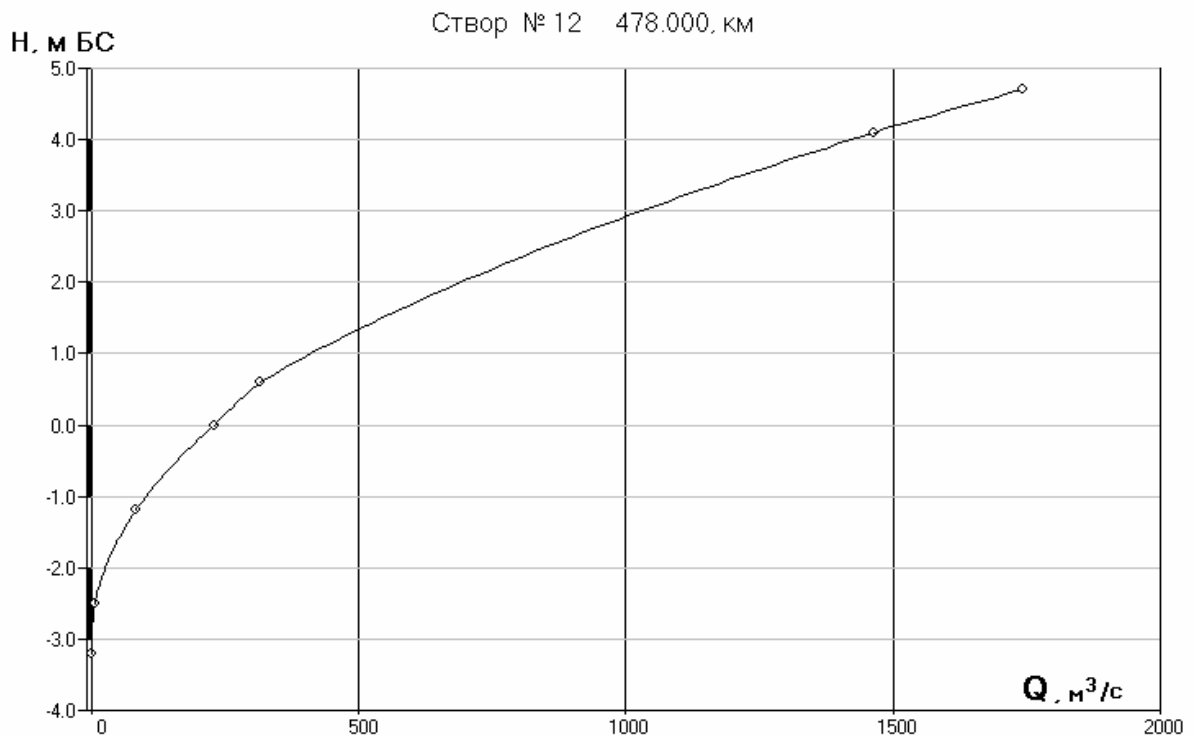
(477,470)



(477,580)

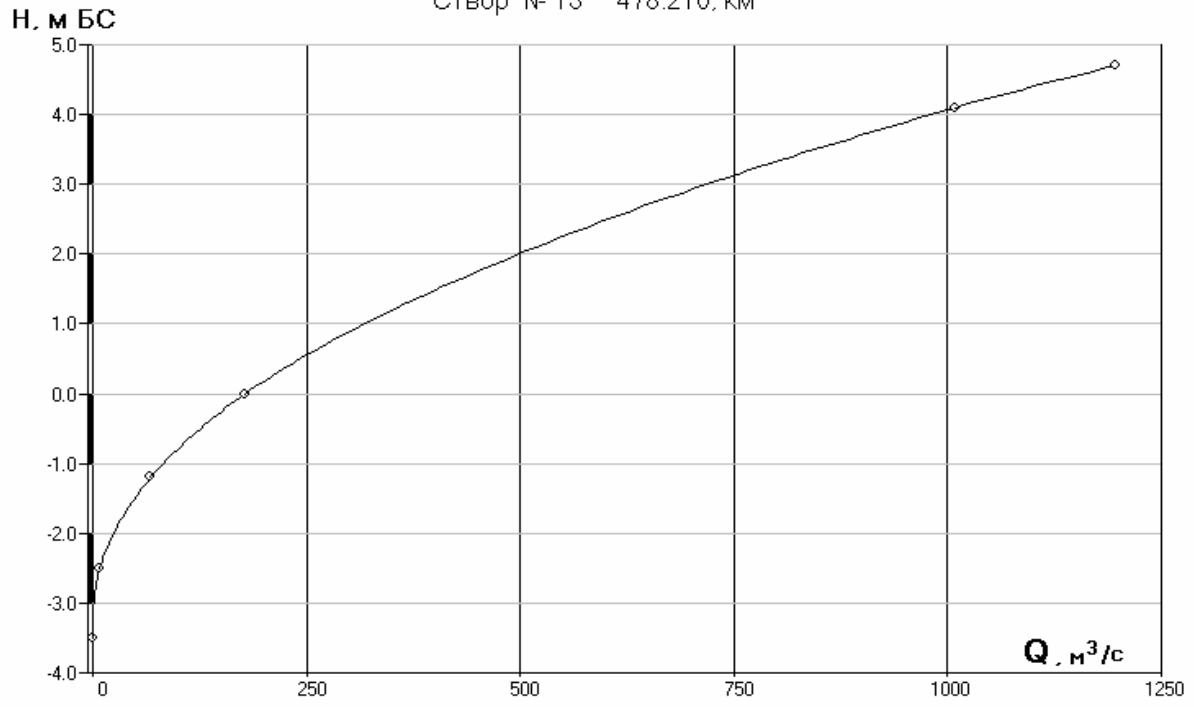


(477,750)

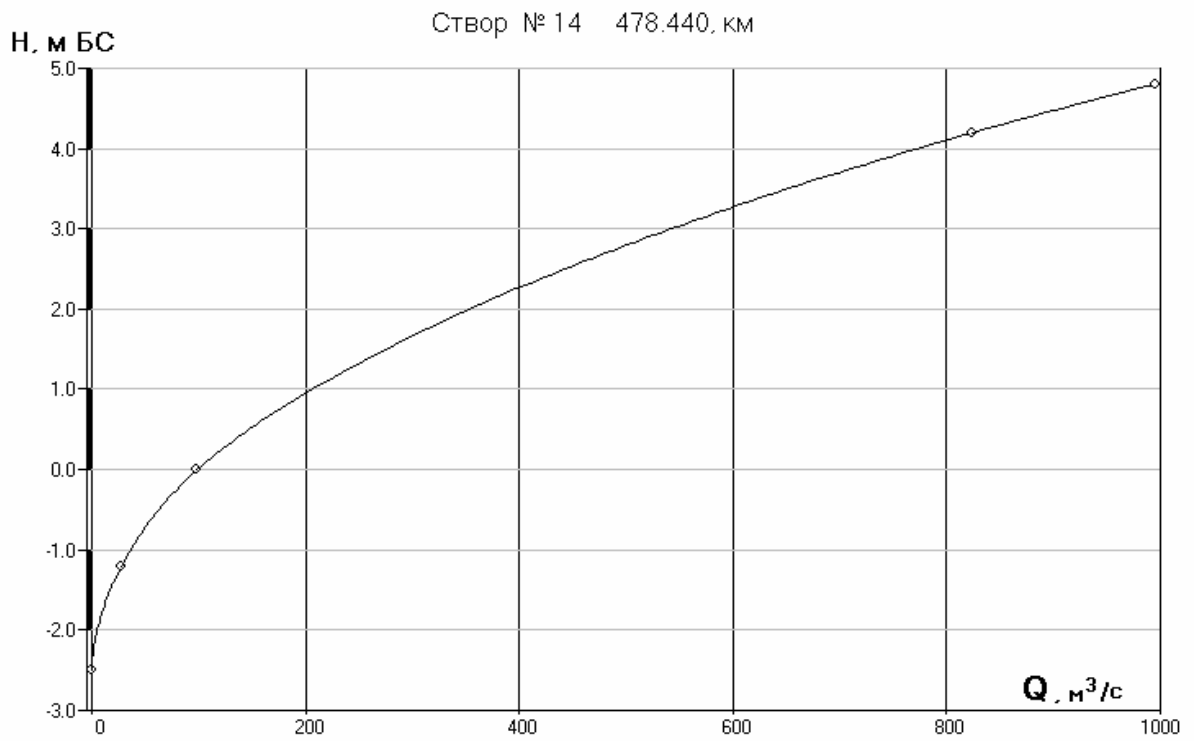


(478
)

Створ № 13 478.210. км



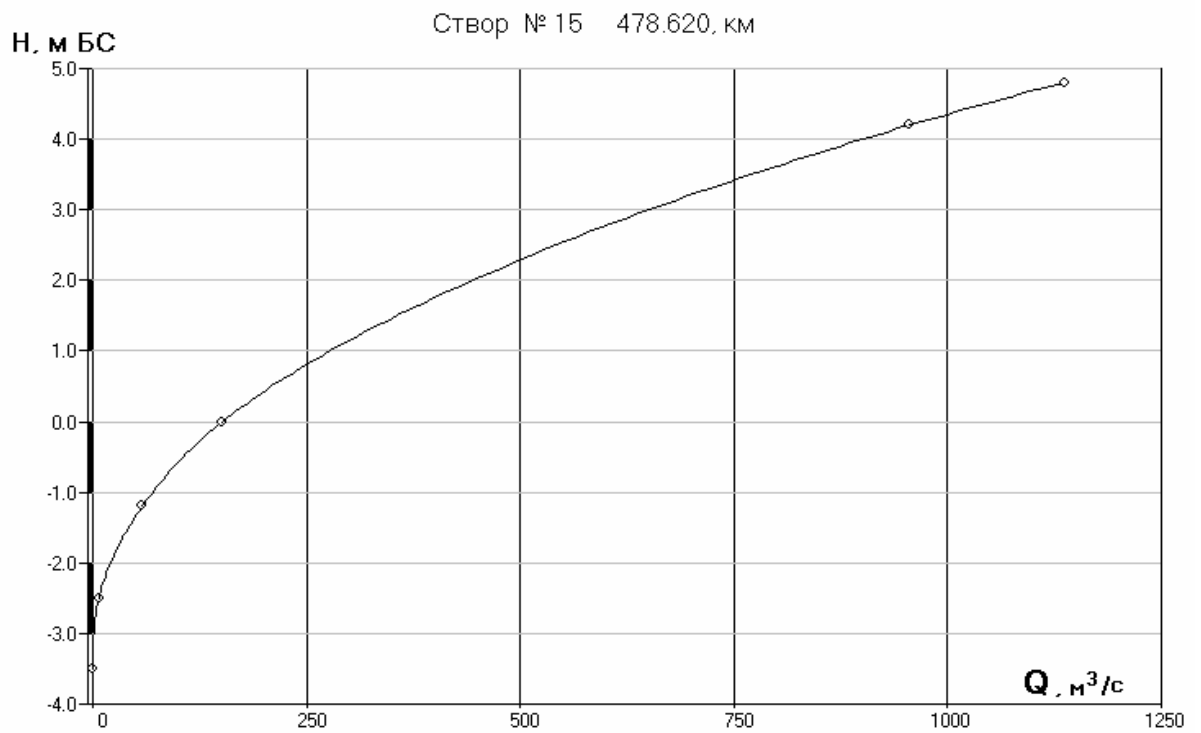
(478,210)



3.2.14 –

14

(478,440
)



48

(478,620)

3.3

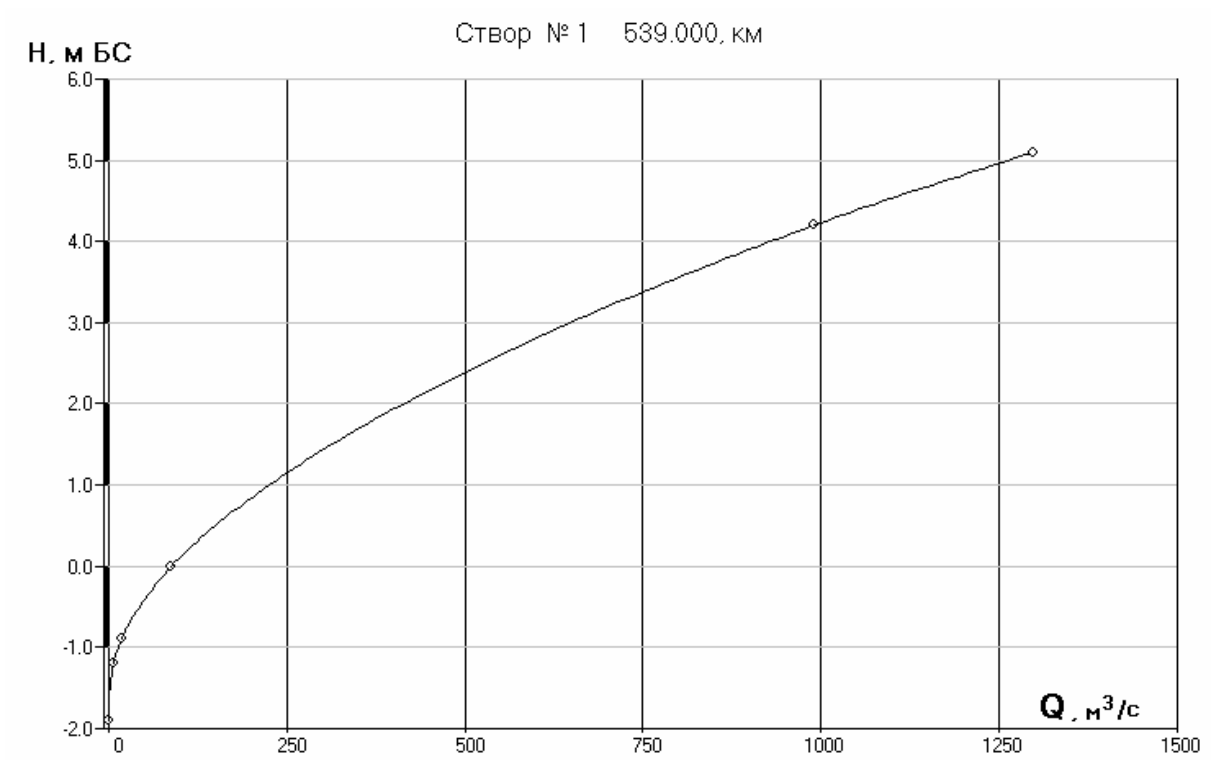
Q=f(H)

539-541

Q=f(H)

539-541 (.

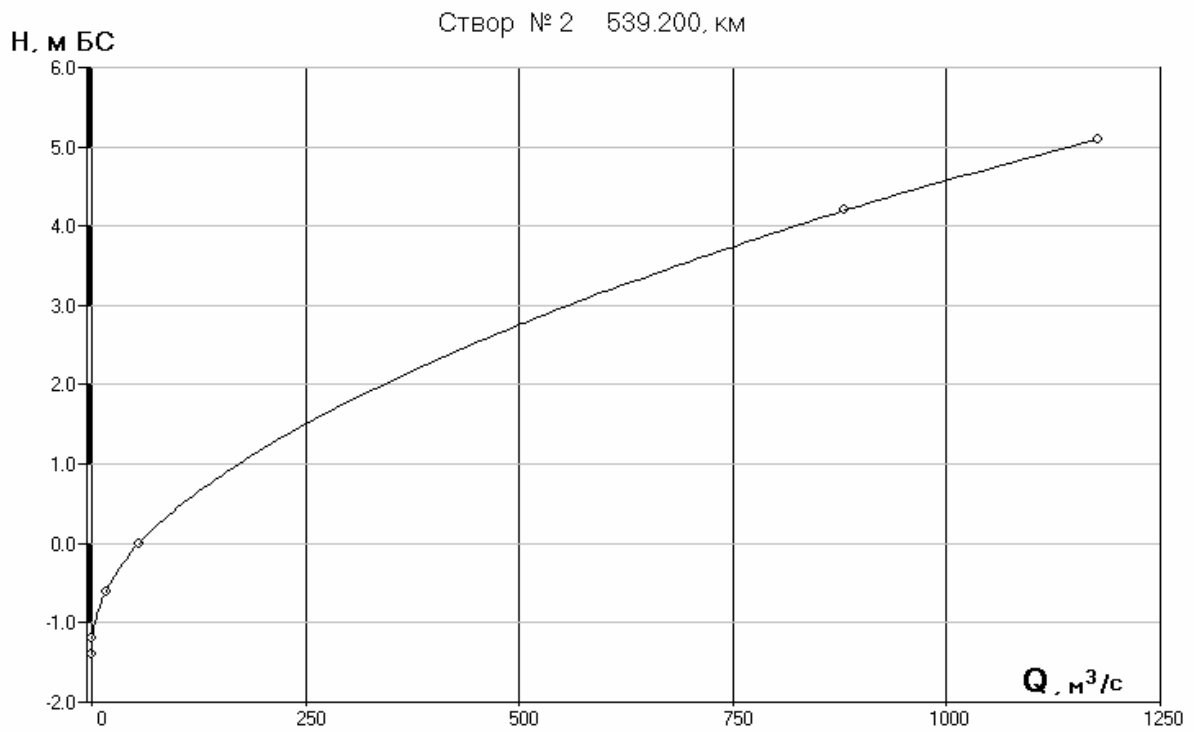
3.3.1-3.3.15):



3.3.1 –

1 (539

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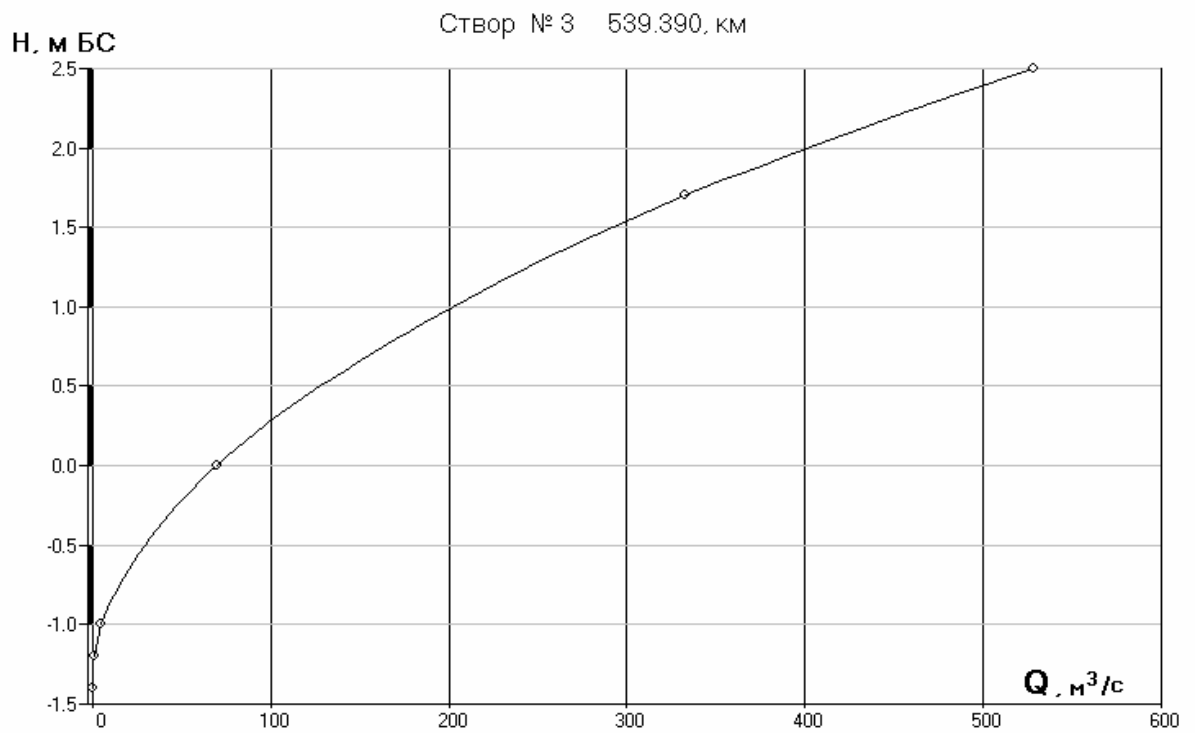


3.3.2 –

2

(539,200

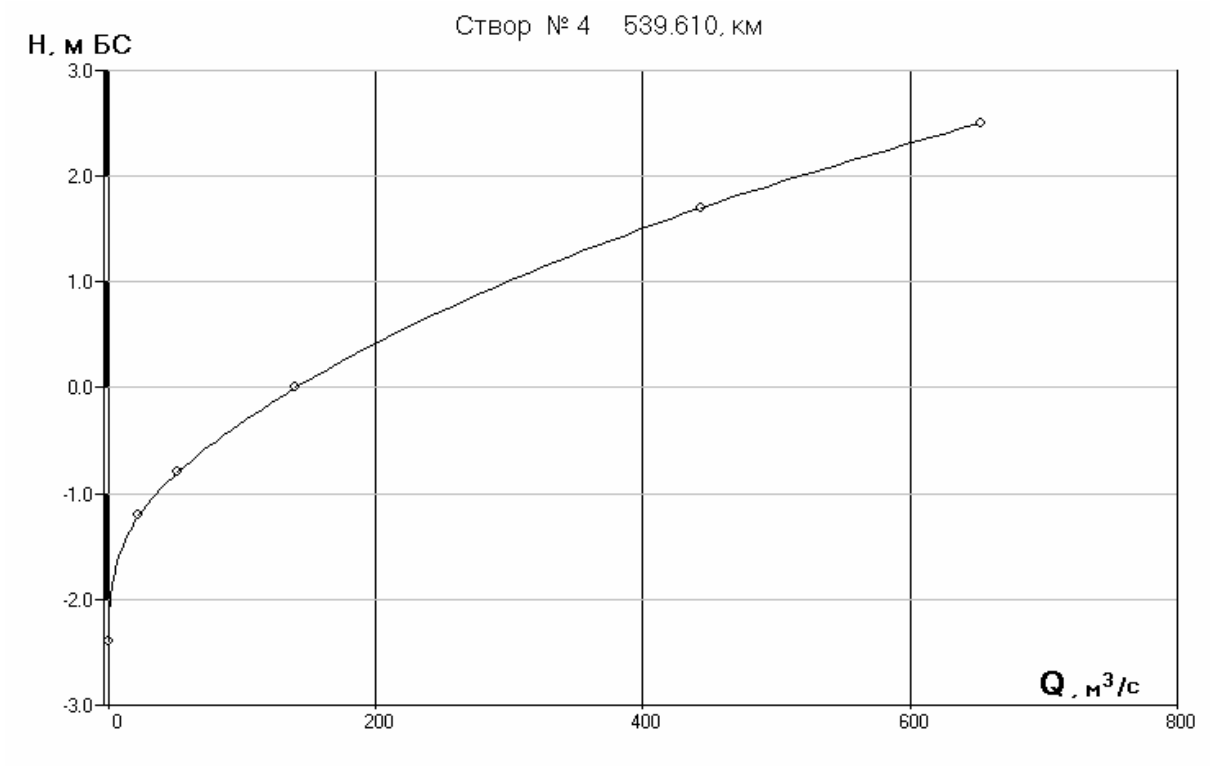
)



3.3.3 –

3

(539,390)

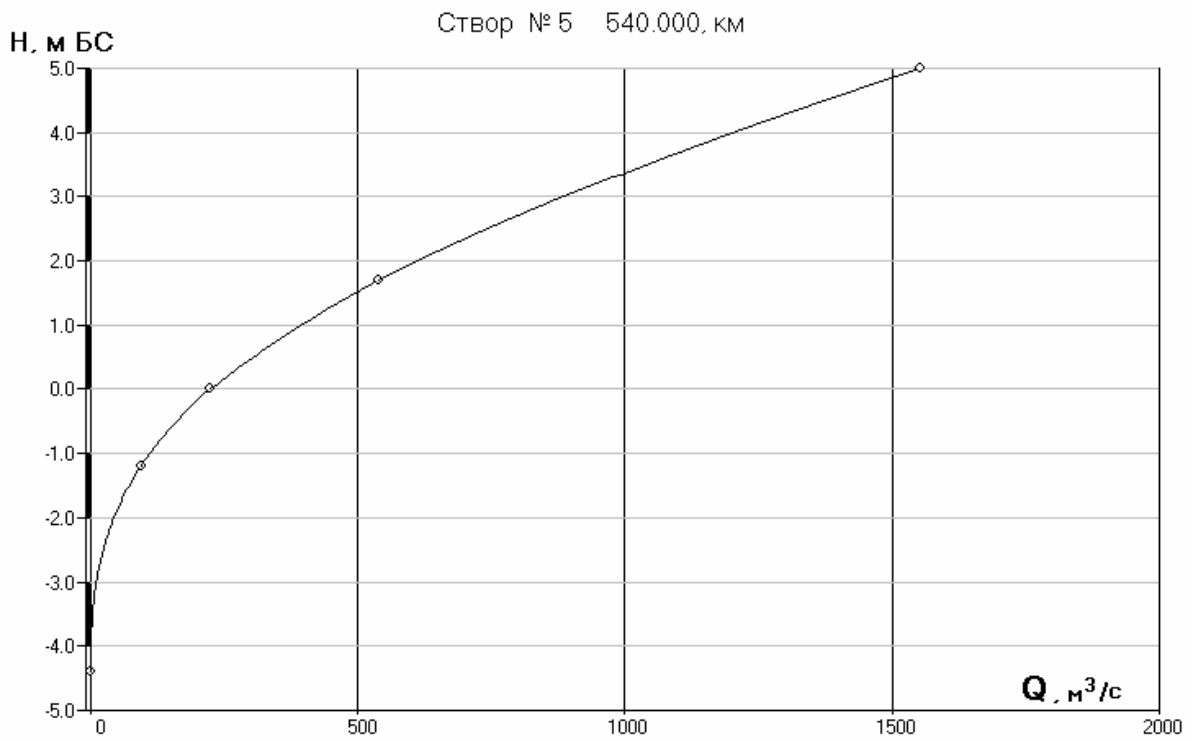


3.3.4 –

4

(539,610

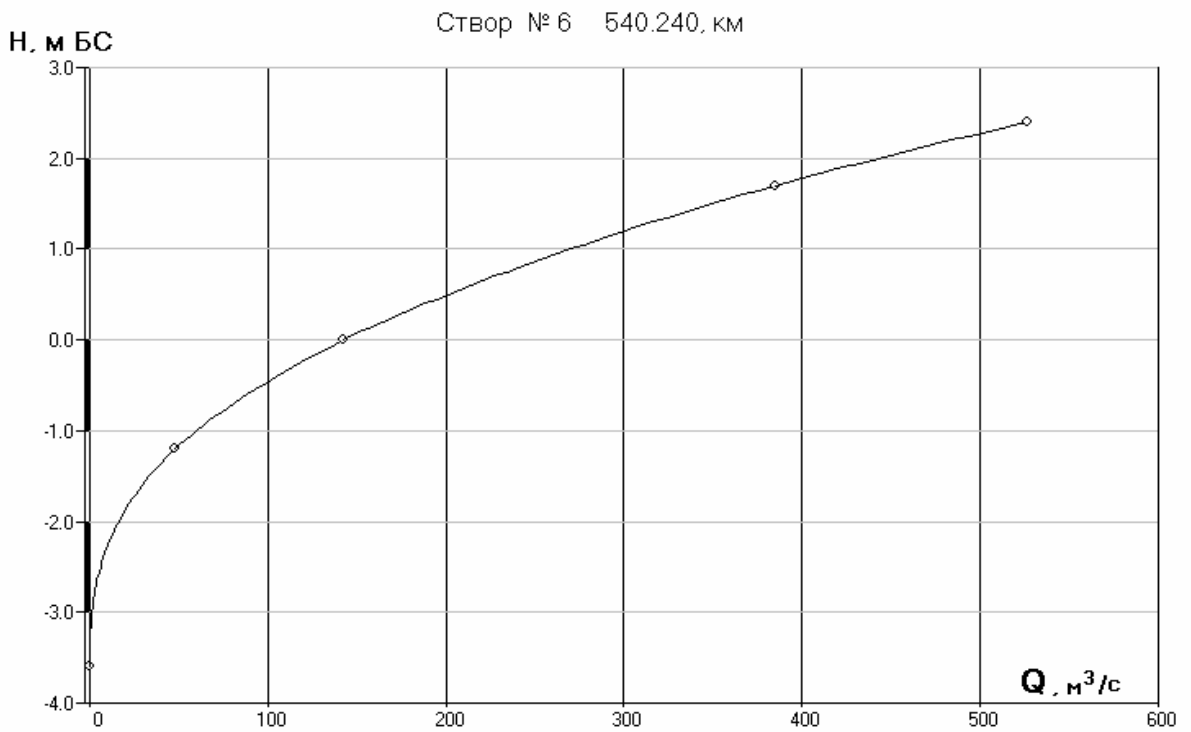
)



3.3.5 –

5 (540

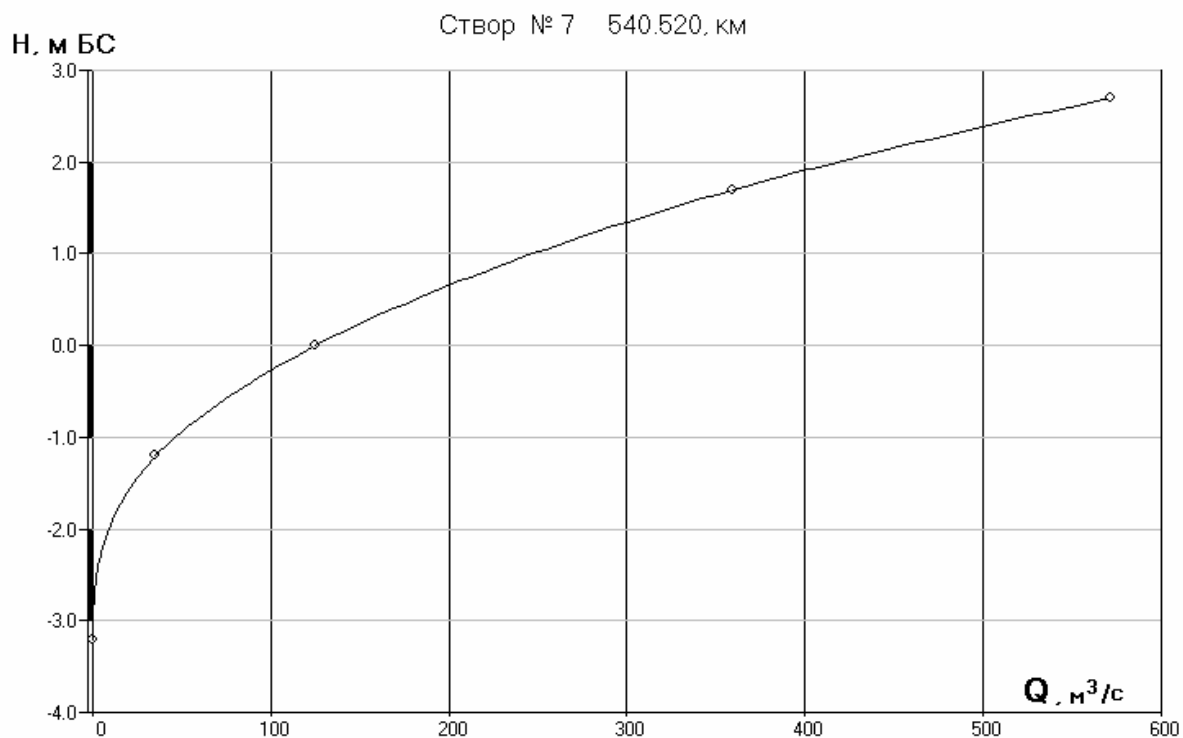
)



3.3.6 –

6

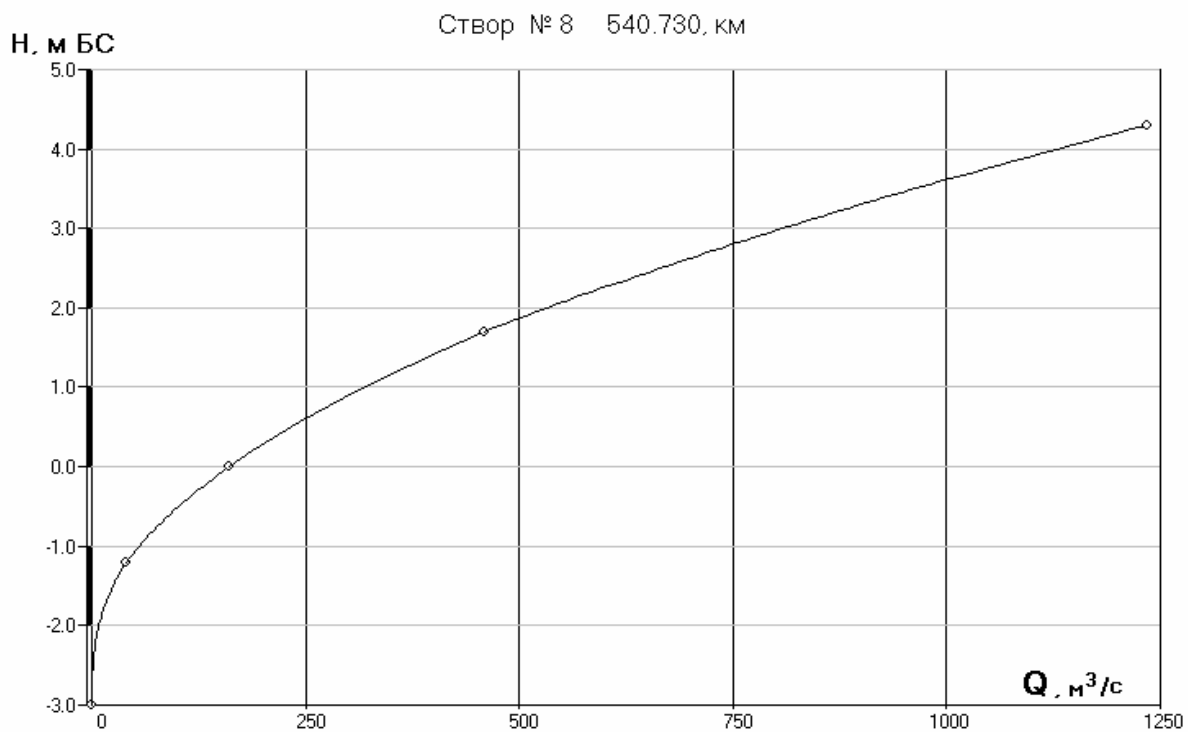
(540,240)



3.3.7 –

7

(540,520)

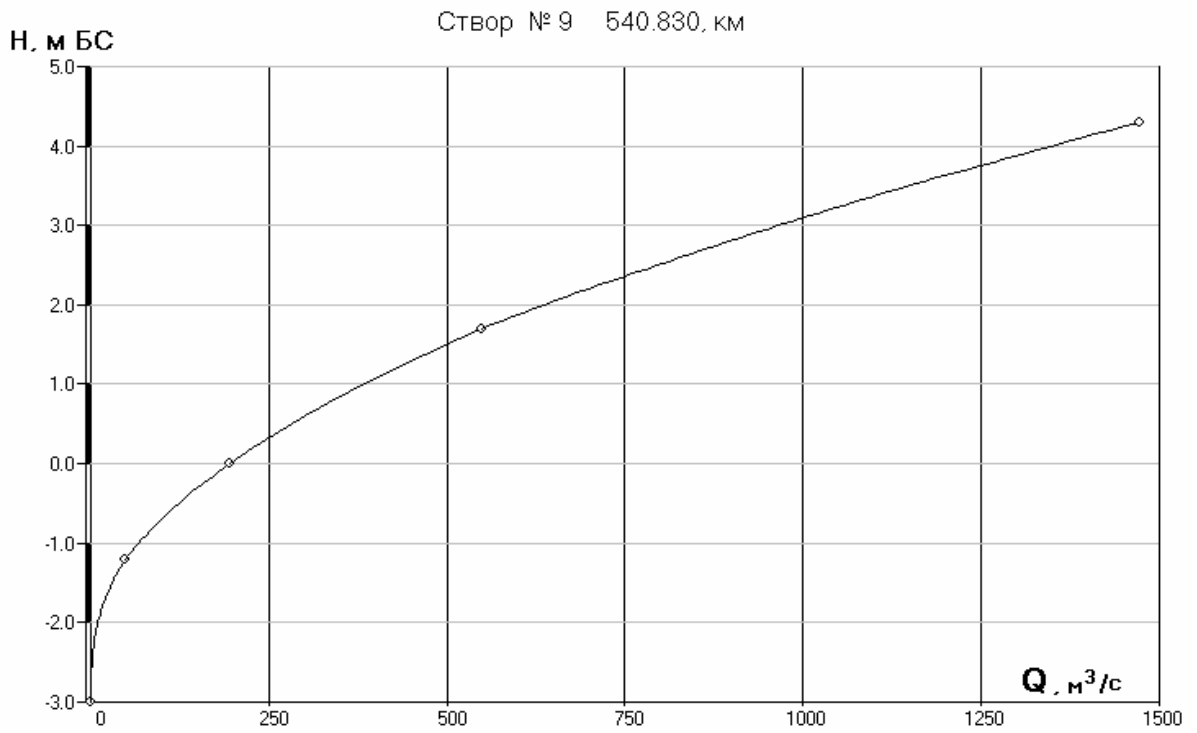


3.3.8 –

8

(540,730

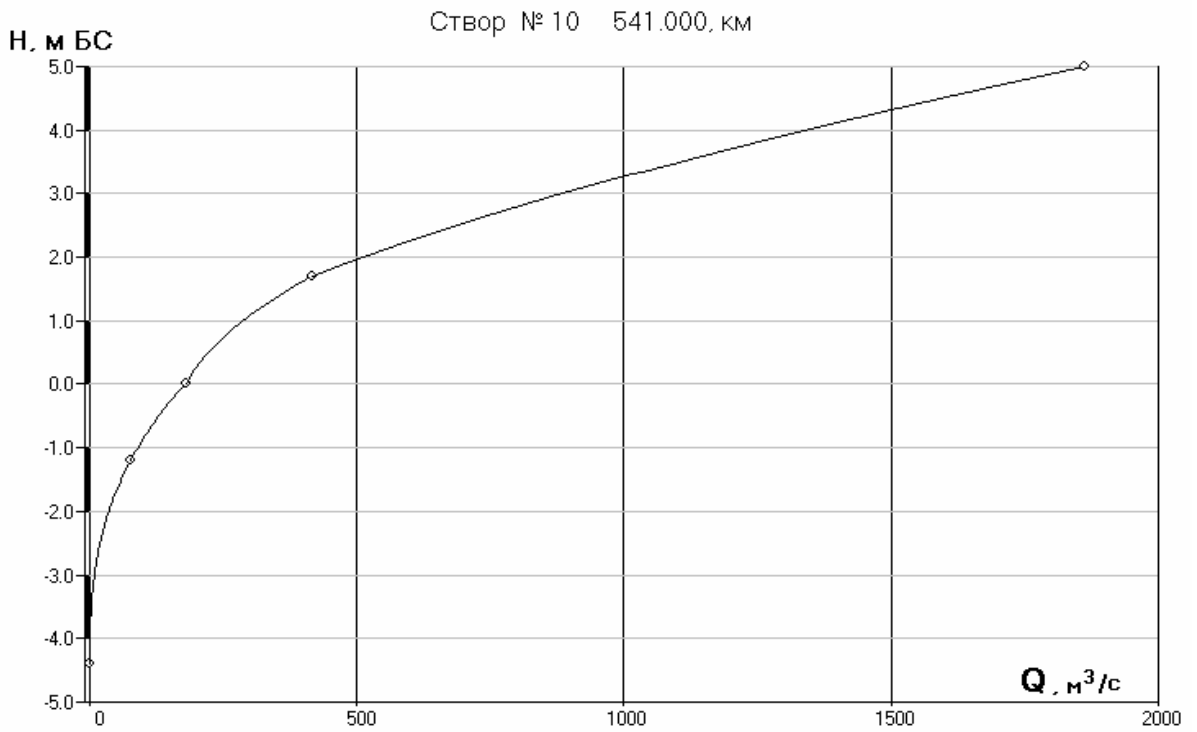
)



3.3.9 –

9

(540,830)



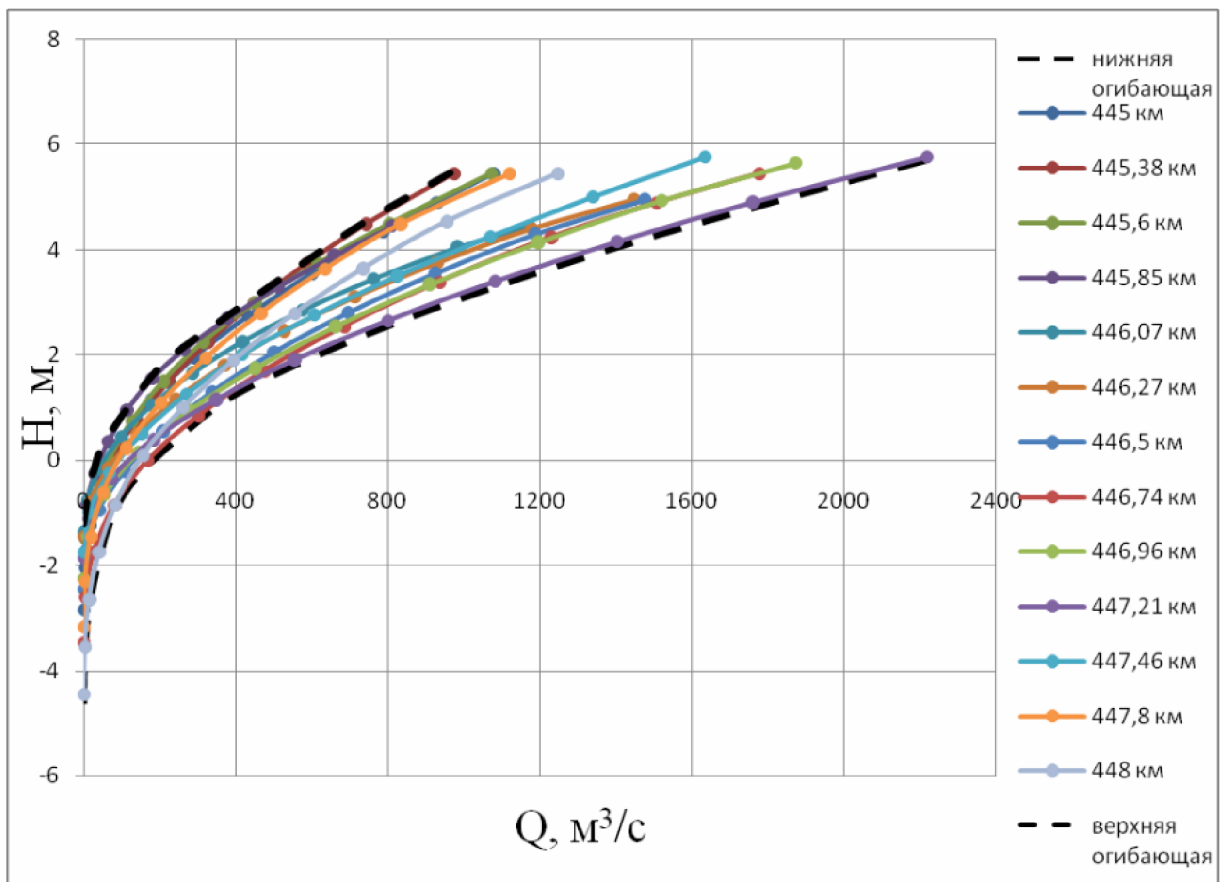
(541)

3.4

$Q=f(H)$

$Q=f(H)$

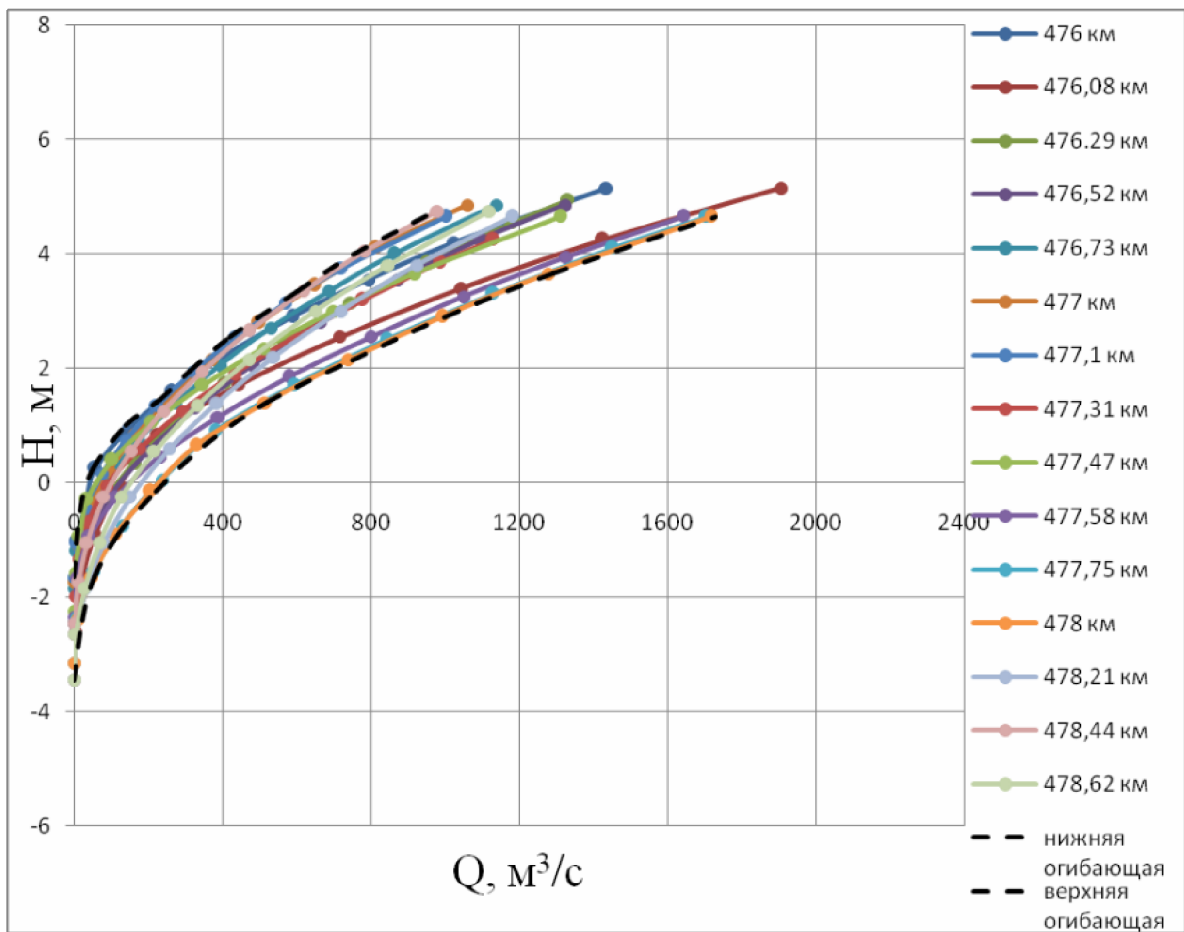
(. 3.4.1-3.4.3):



3.4.1 –

$Q=f(H)$

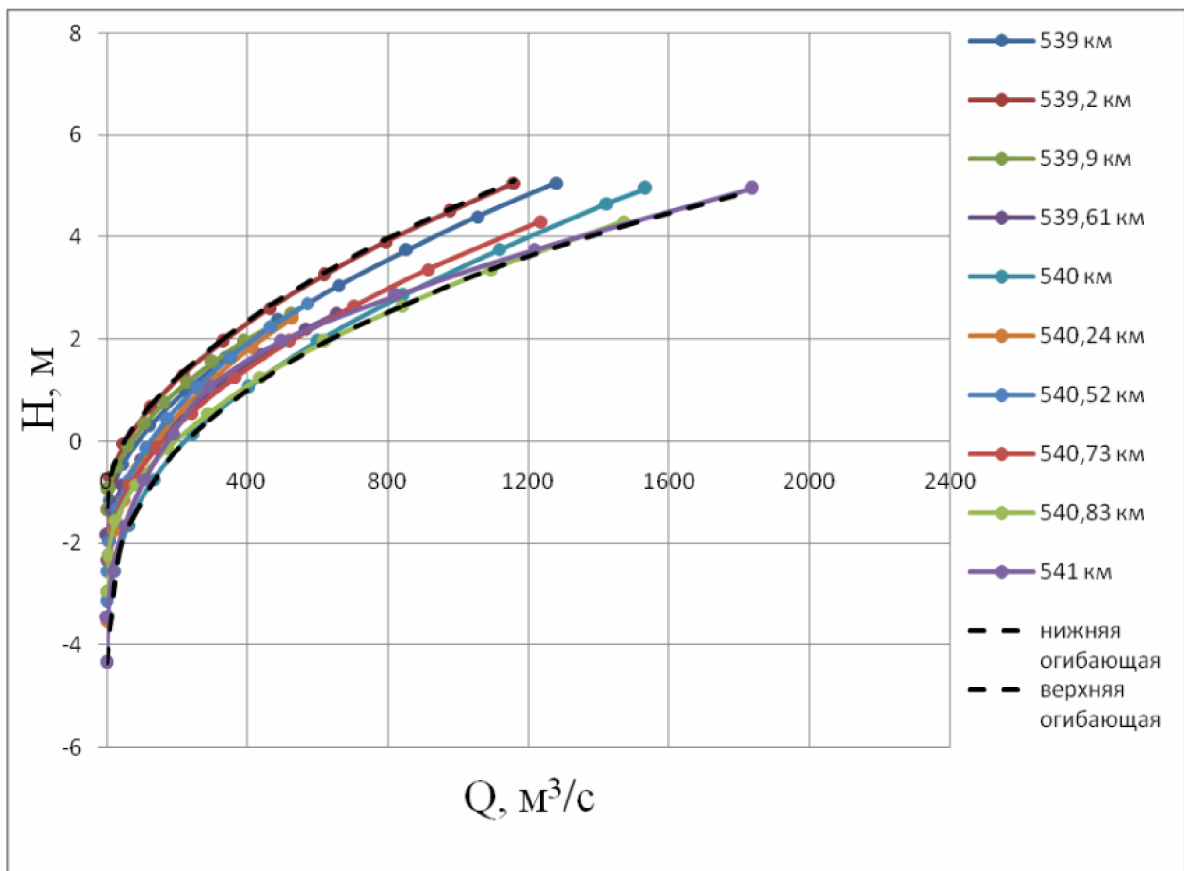
445-448



3.4.2 –

$Q=f(H)$

476-478



3.4.3 –

$Q=f(H)$

539-541

200³ / .
(3.5.1).

3.5.1 –

Q, /	,					
	445-448		476-478		539-541	
	H,					
	min	max	min	max	min	max
200	0,20	1,70	-0,20	1,25	-0,15	1,17
400	1,35	2,80	1,00	2,40	1,08	2,33
600	2,05	3,80	1,70	3,25	1,85	3,17
800	2,65	4,78	2,35	4,10	2,57	3,95
1000	3,20	5,60	2,90	4,85	3,1	4,6

3.5.2).

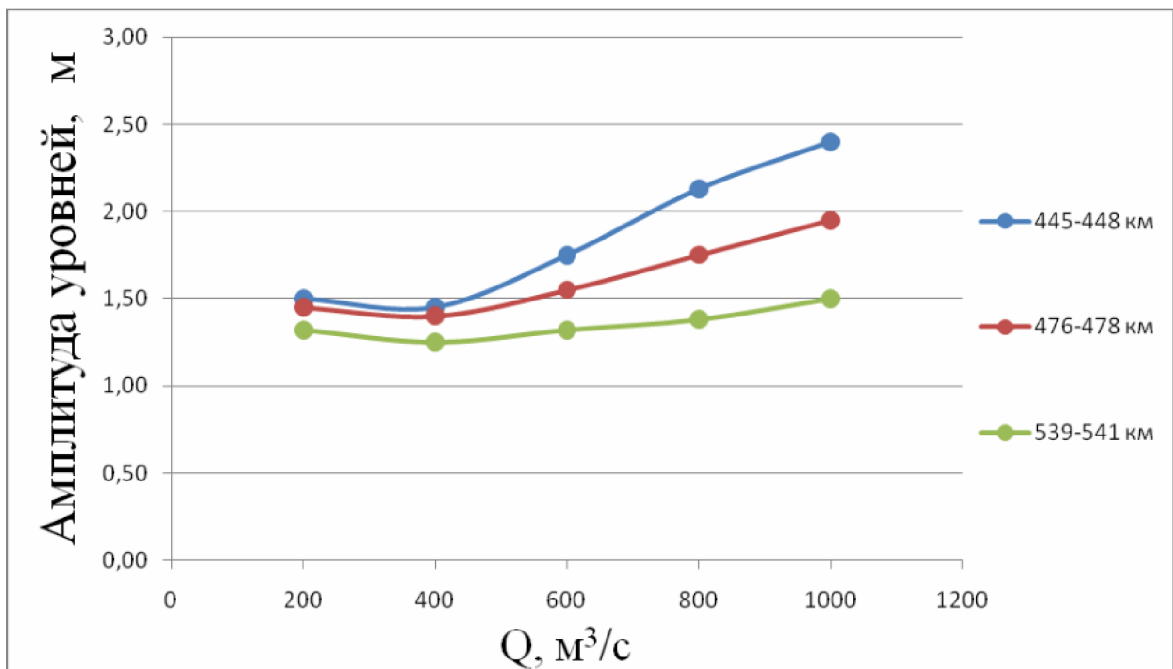
(

3.5.2 –

Q, /с			
	445-448	476-478	539-541
200	1,50	1,45	1,32
400	1,45	1,40	1,25
600	1,75	1,55	1,32
800	2,13	1,75	1,38
1000	2,40	1,95	1,50
.	1,85	1,62	1,35

1,42
 – 1,75 .

(. 3.5.1):



3.5.1 –

， ，
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：
400 ^{3/} . 0 400 ^{3/} ,

445-448

，
400 ^{3/}

539-541

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，
，

Q=f(H) 38 445-448 ,
476-478 549-541 .

Q=f(H).

Q=f(H)

, ,
: 0 400 ^{3/} ,
400 ^{3/} .

2,4 .

445-448 ,

400 ^{3/}

539-541 ,

1. - : , 1977 - 448
2. . -
, 1990 . - 6-8
3. 3 [] - :
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- [] //
- 2007. 8 (38):
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/ . - ., 1978. - . 53423.