CHAPTER IV

RESULTS OF EXPERIMENTS

At the completion of the experiments, results are summarized as graphs shown from Fig. 6-23.

Headloss through Media with Time

In Fig 6-17 graphs were plotted to show the loss of head at different depth of media bed at different interval of time, for different rates of flow, and concentrations of turbidity. The abscissas showed filter depth in centimeters and the ordinates represented headloss in centimeters of water gauge. The headloss for 0 hr represented the initial headloss by passing clear water at required flow rates through the clean media bed for several hours. The antharcite coal layer was from 0 to 45 cm depth. The headlosses were recorded at points 0, 15, 30 and 45 cm. from the top of media. From 45 to 70 cm, it was the layer of silica sand and records were made at points 57.5 and 70 cm. The lowest layer was 10 cm. of garnet sand from 70 to 80 cm. depth. The headloss at 80 was recorded as the total headloss of the filter.

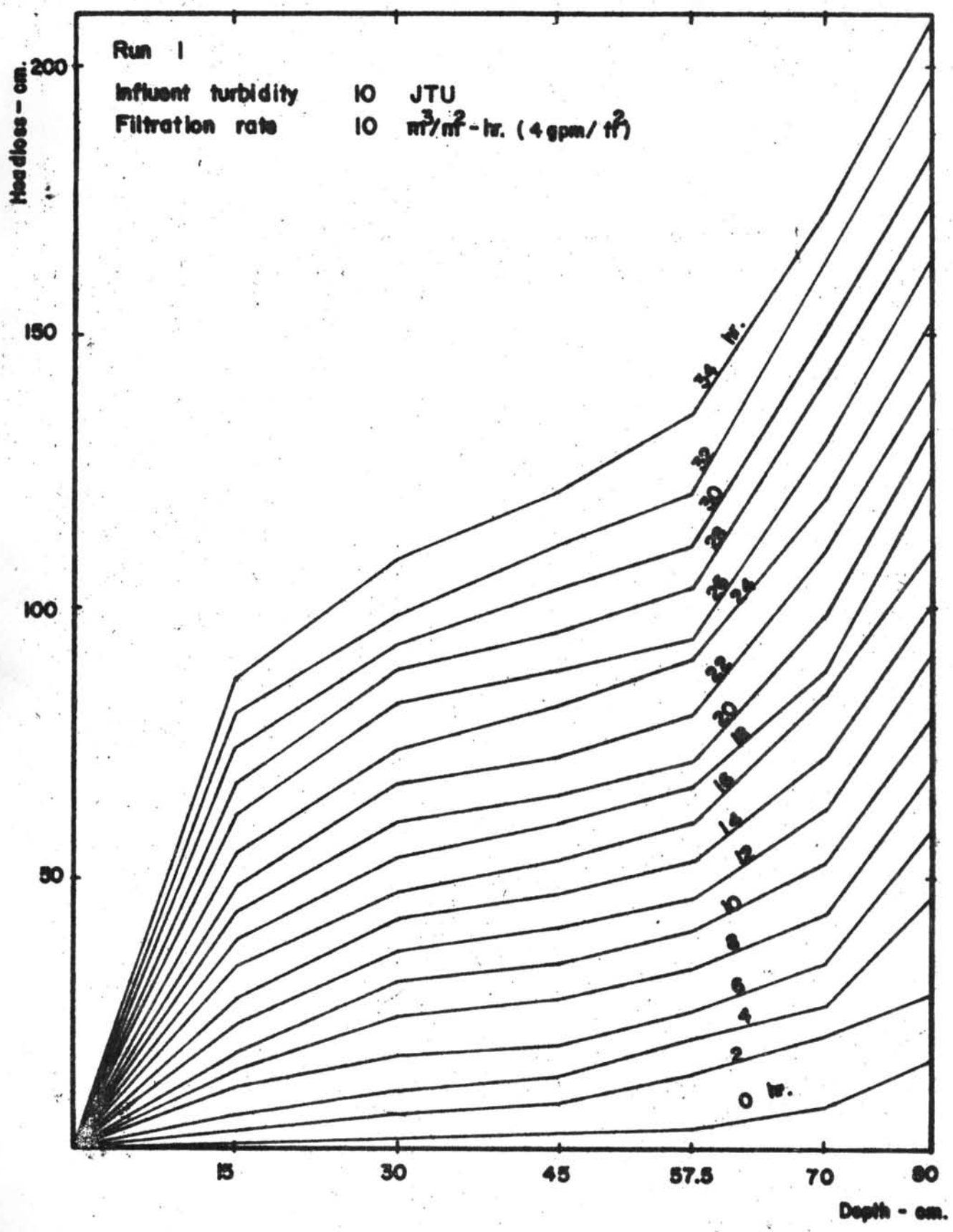

FIG. 6 HEADLOSS THROUGH MEDIA WITH TIME.

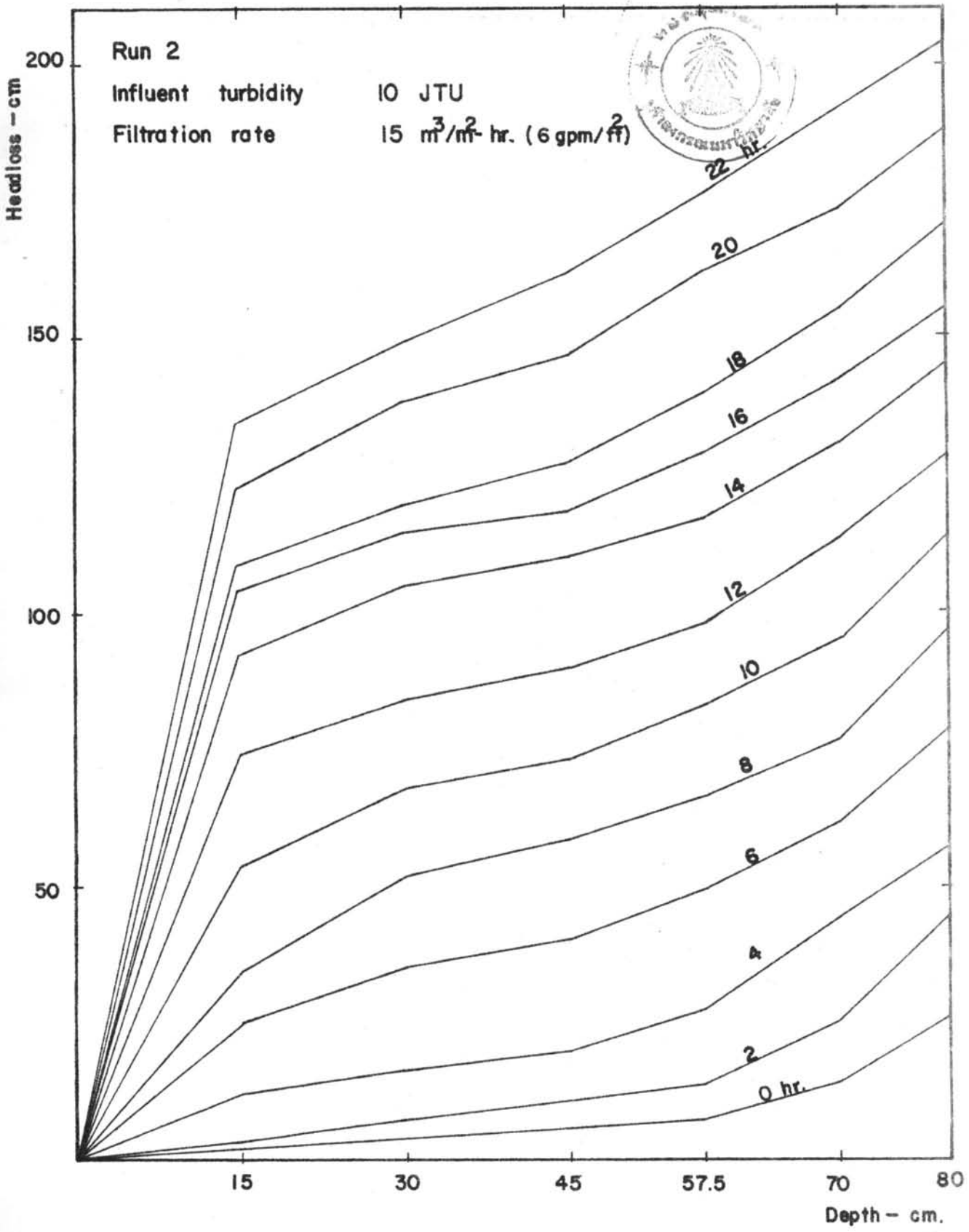

FIG. 7 HEADLOSS THROUGH MEDIA WITH TIME.

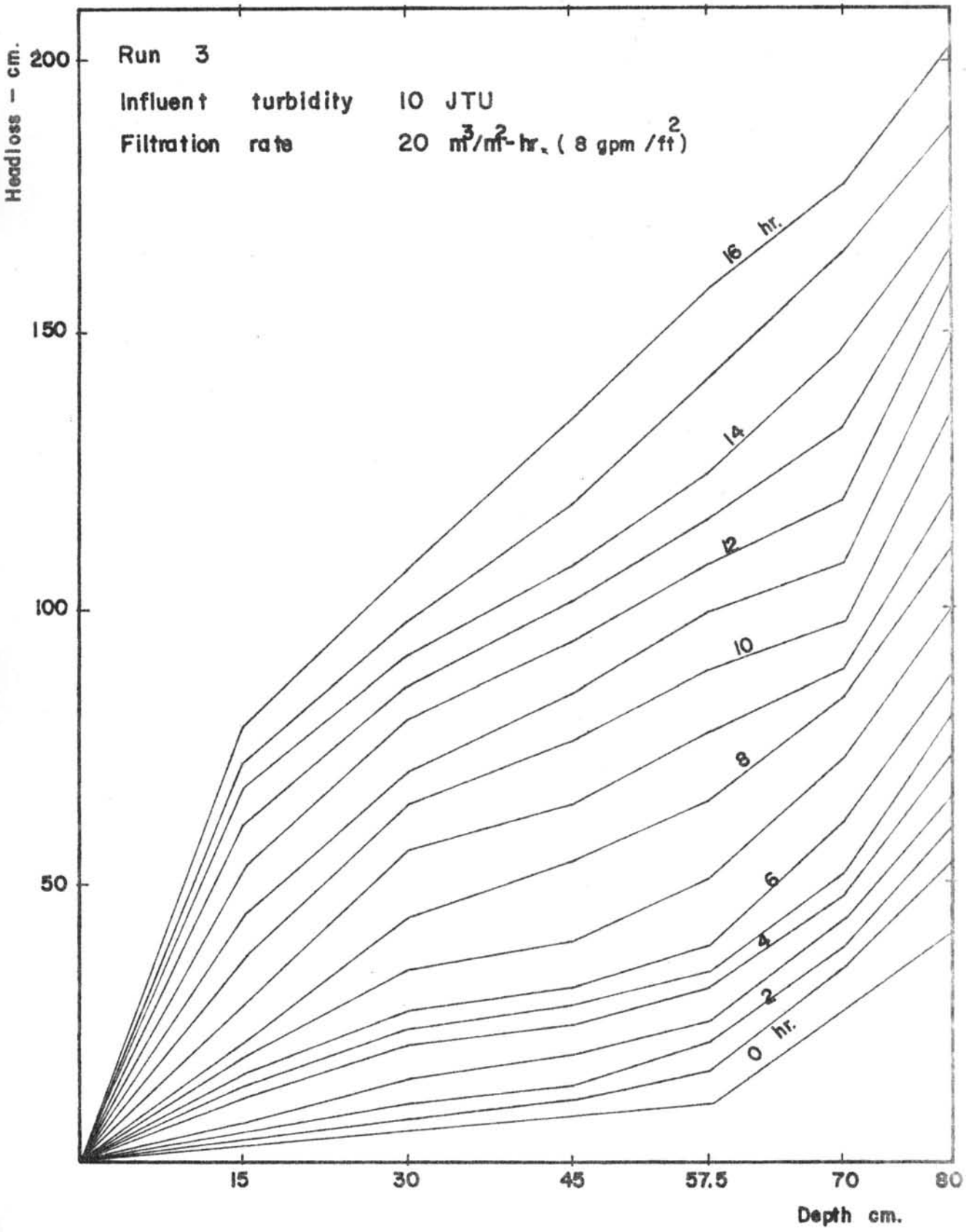

FIG. 8 HEADLOSS THROUGH MEDIA WITH TIME

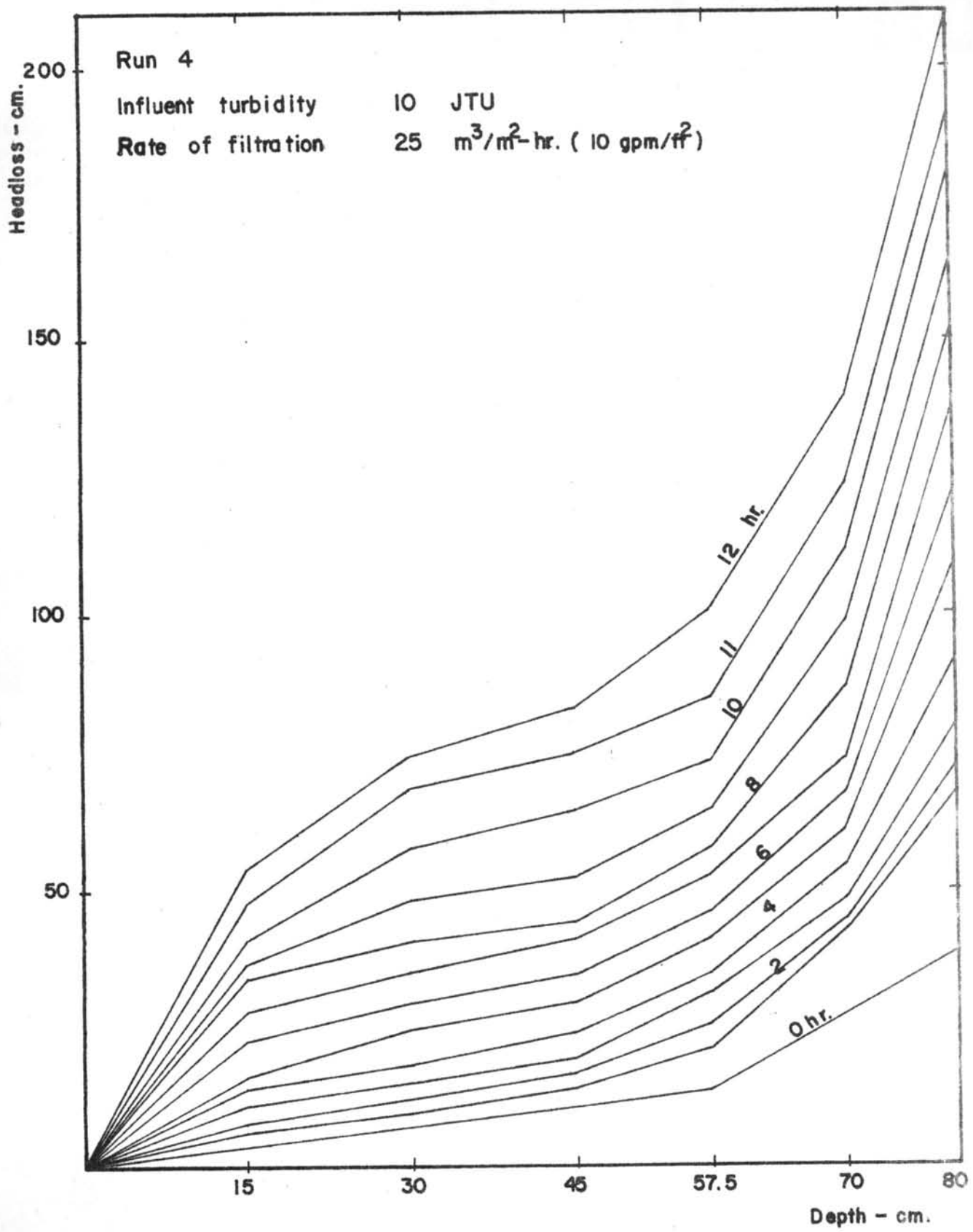

FIG. 9 HEADLOSS THROUGH MEDIA WITH TIME

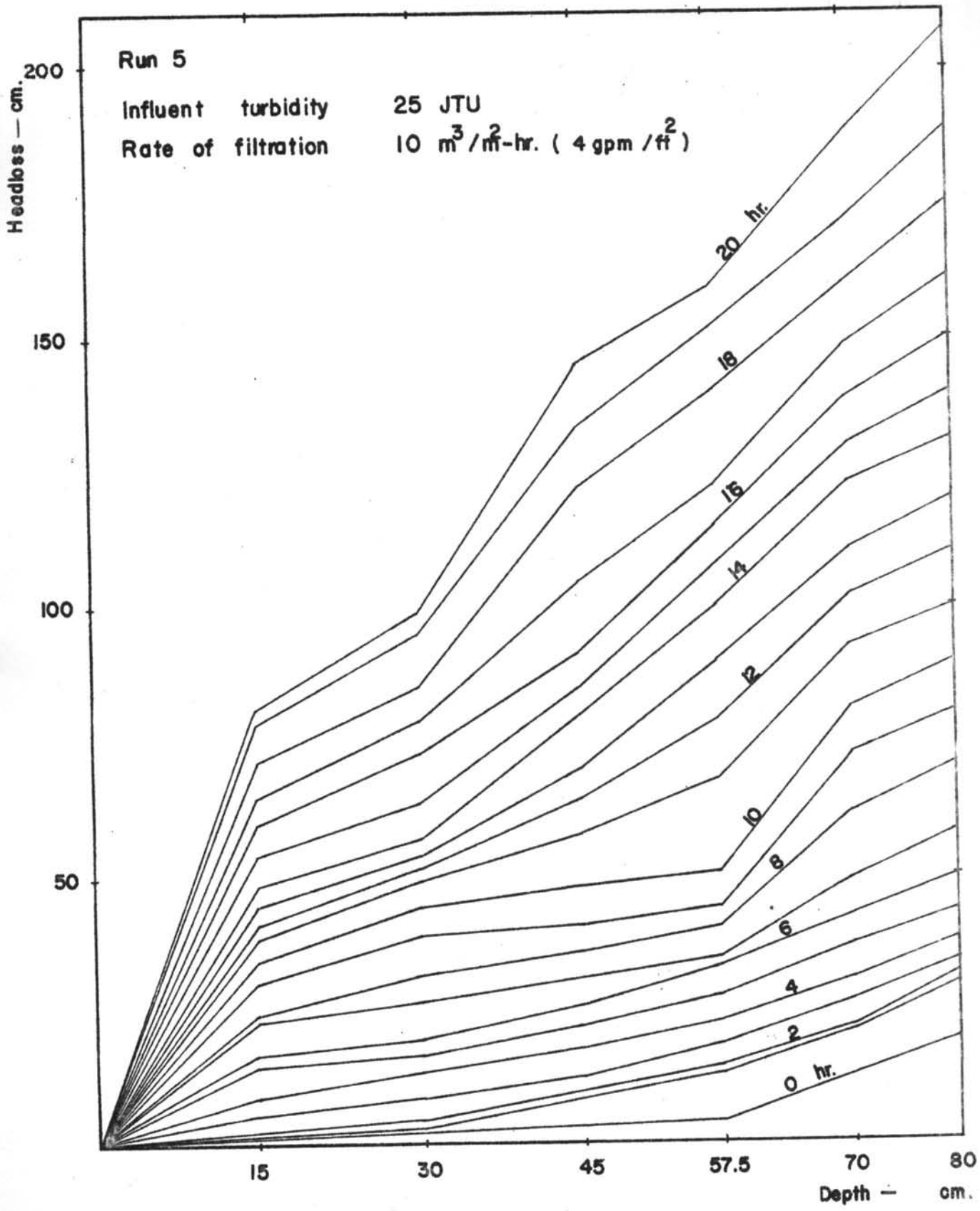

FIG. 10 HEADLOSS THROUGH MEDIA WITH TIME.

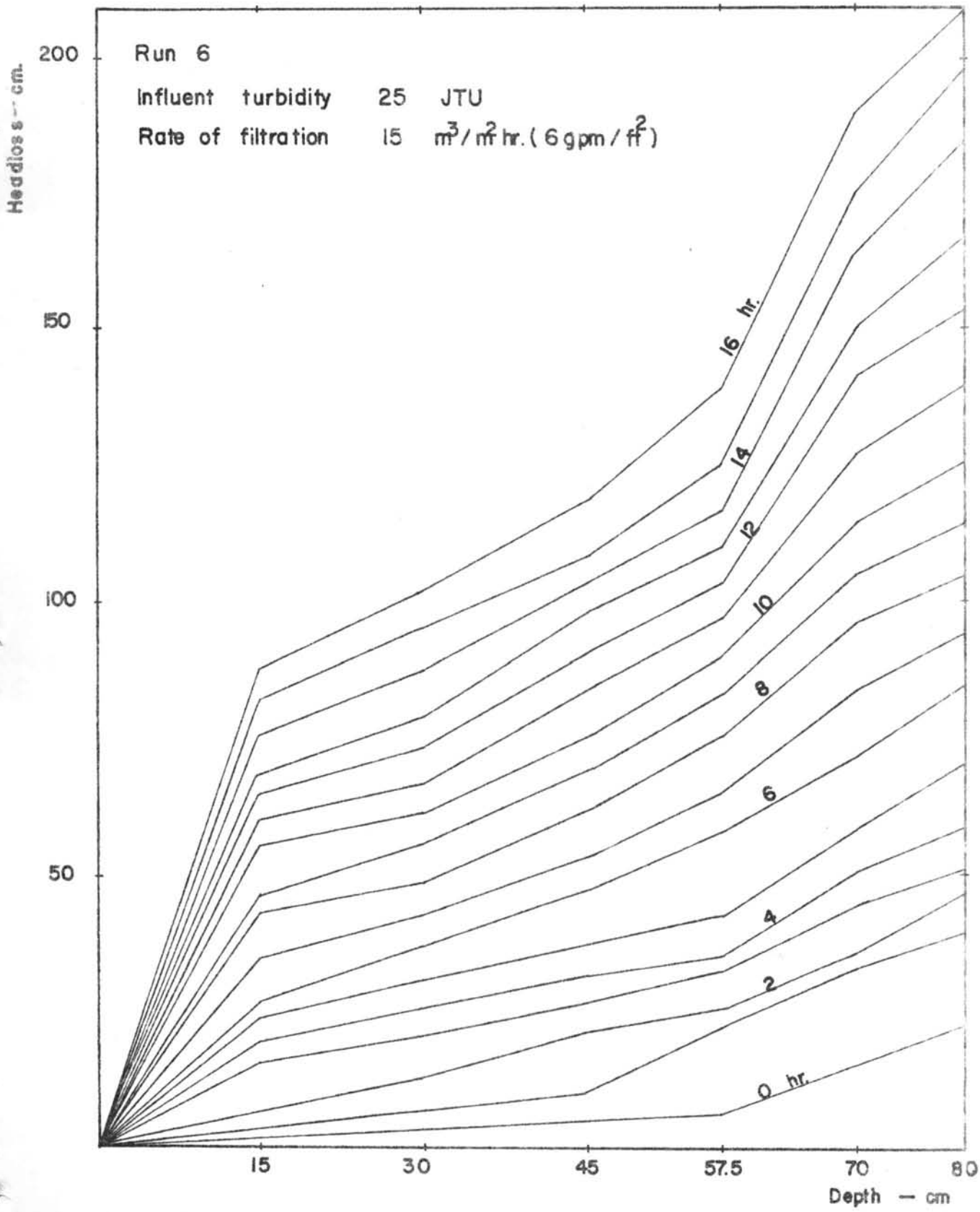

FIG. II HEADLOSS THROUGH MEDIA WITH TIME

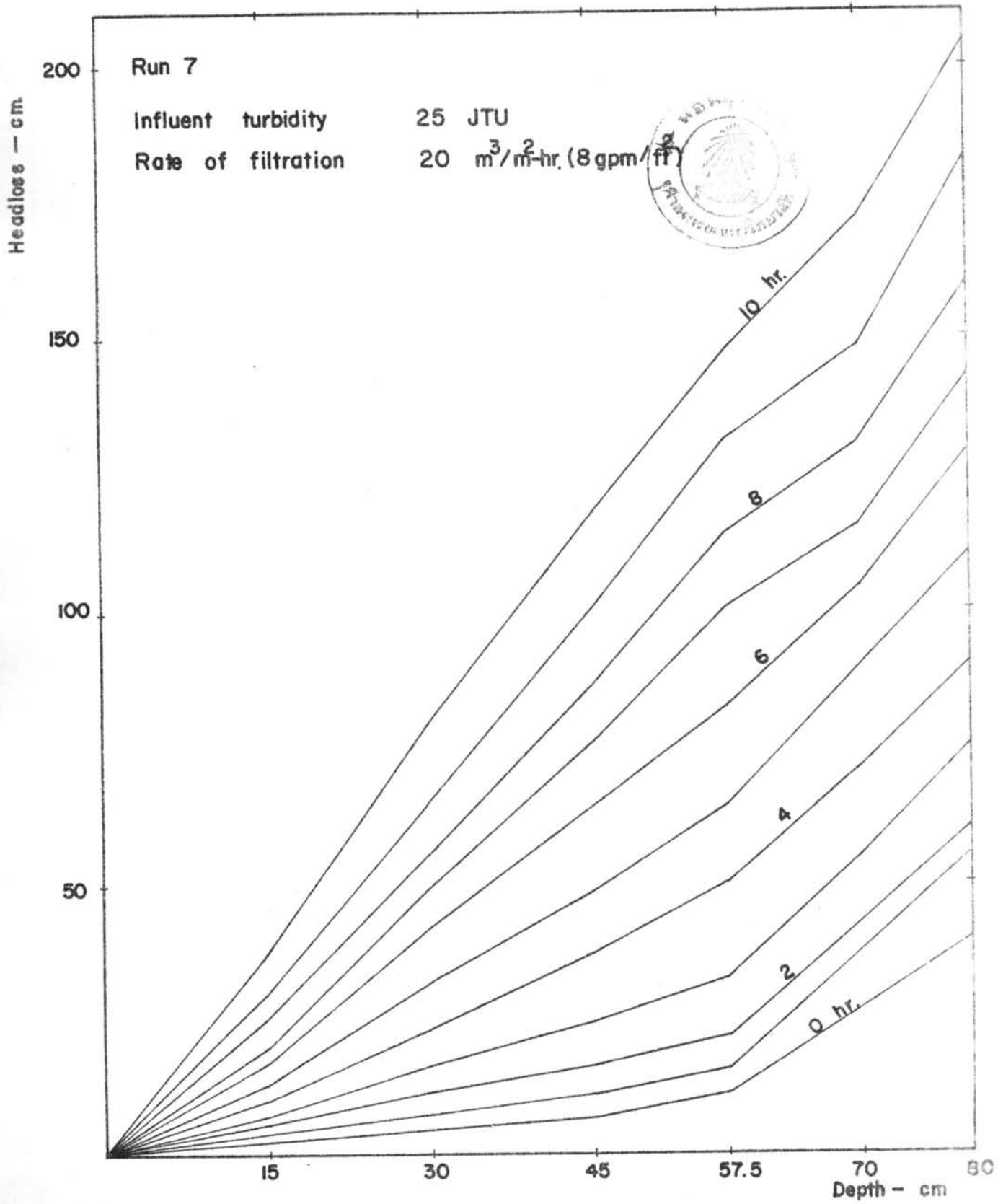

FIG. 12 HEADLOSS THROUGH MEDIA WITH TIME

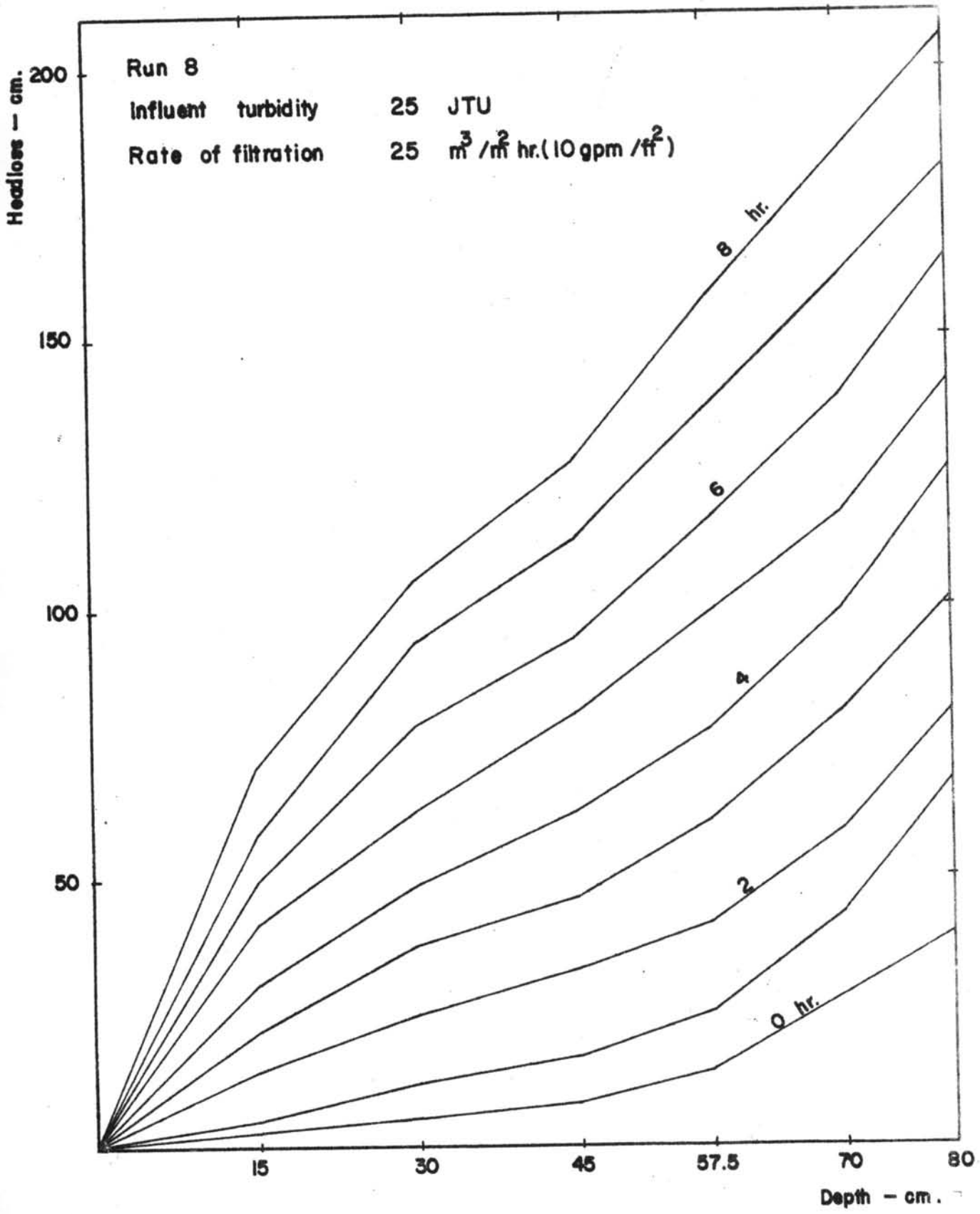

FIG.-13 HEADLOSS THROUGH MEDIA WITH TIME

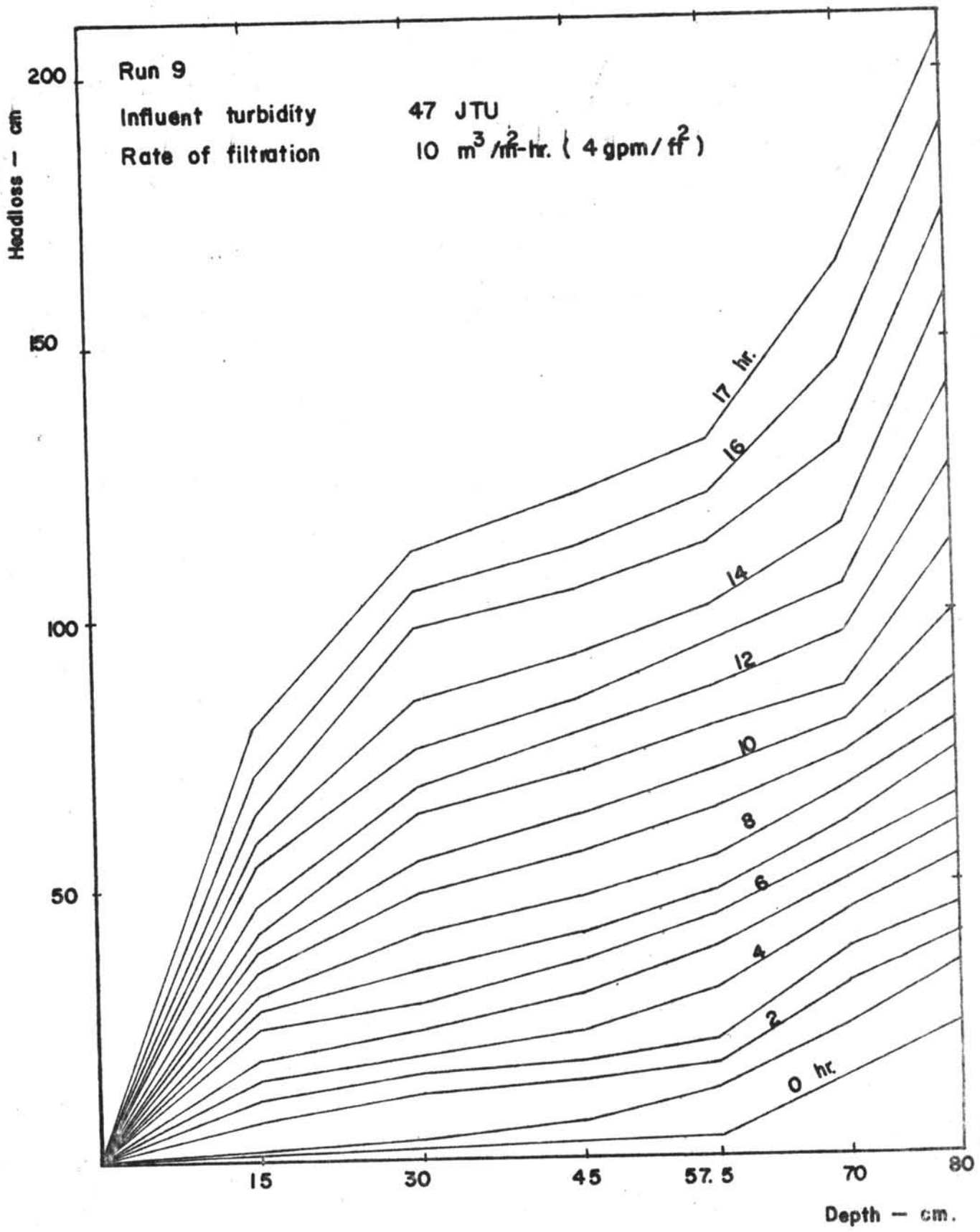

FIG. 14 HEADLOSS THROUGH MEDIA WITH TIME

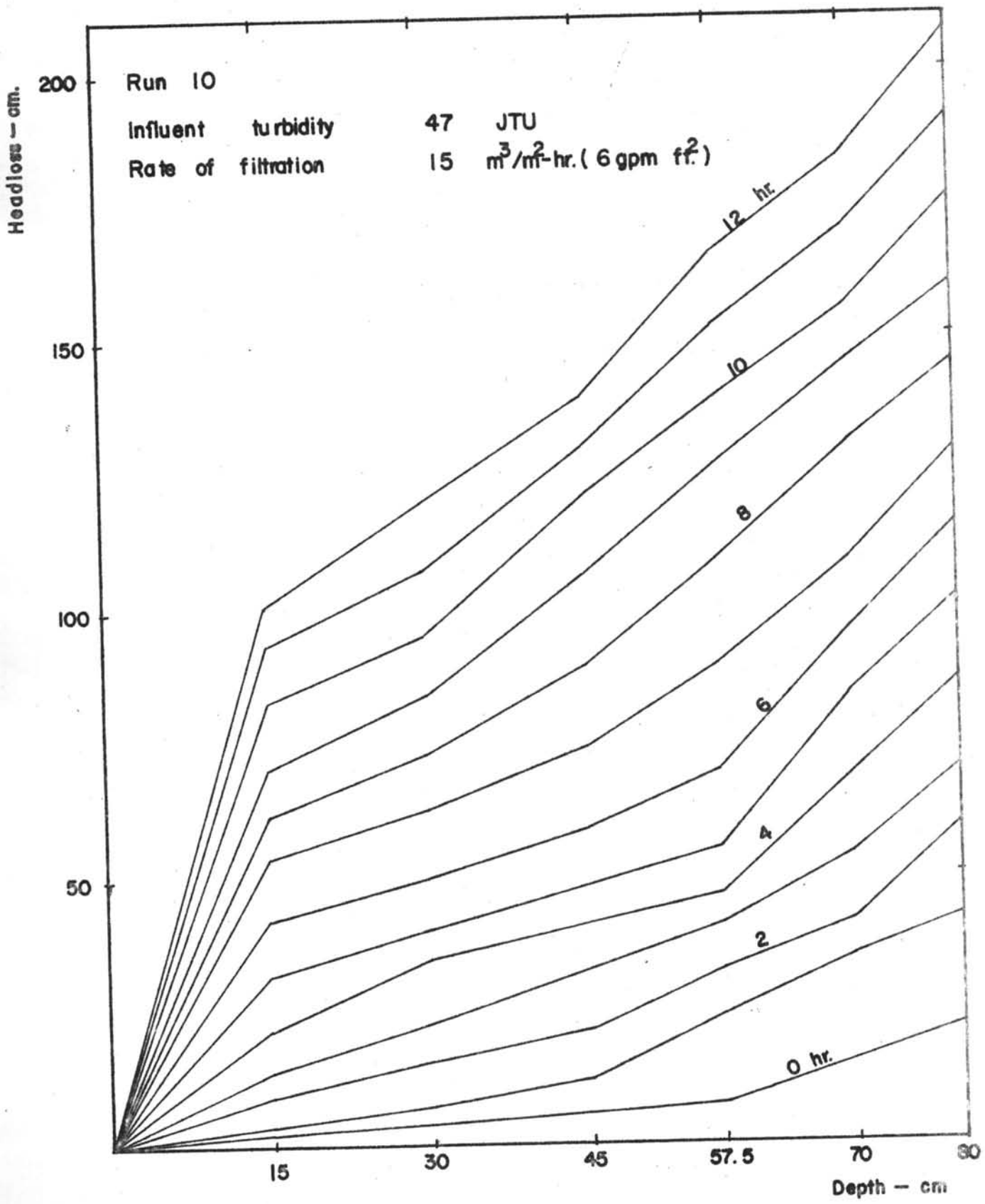

FIG. 15 HEADLOSS THROUGH MEDIA WITH TIME

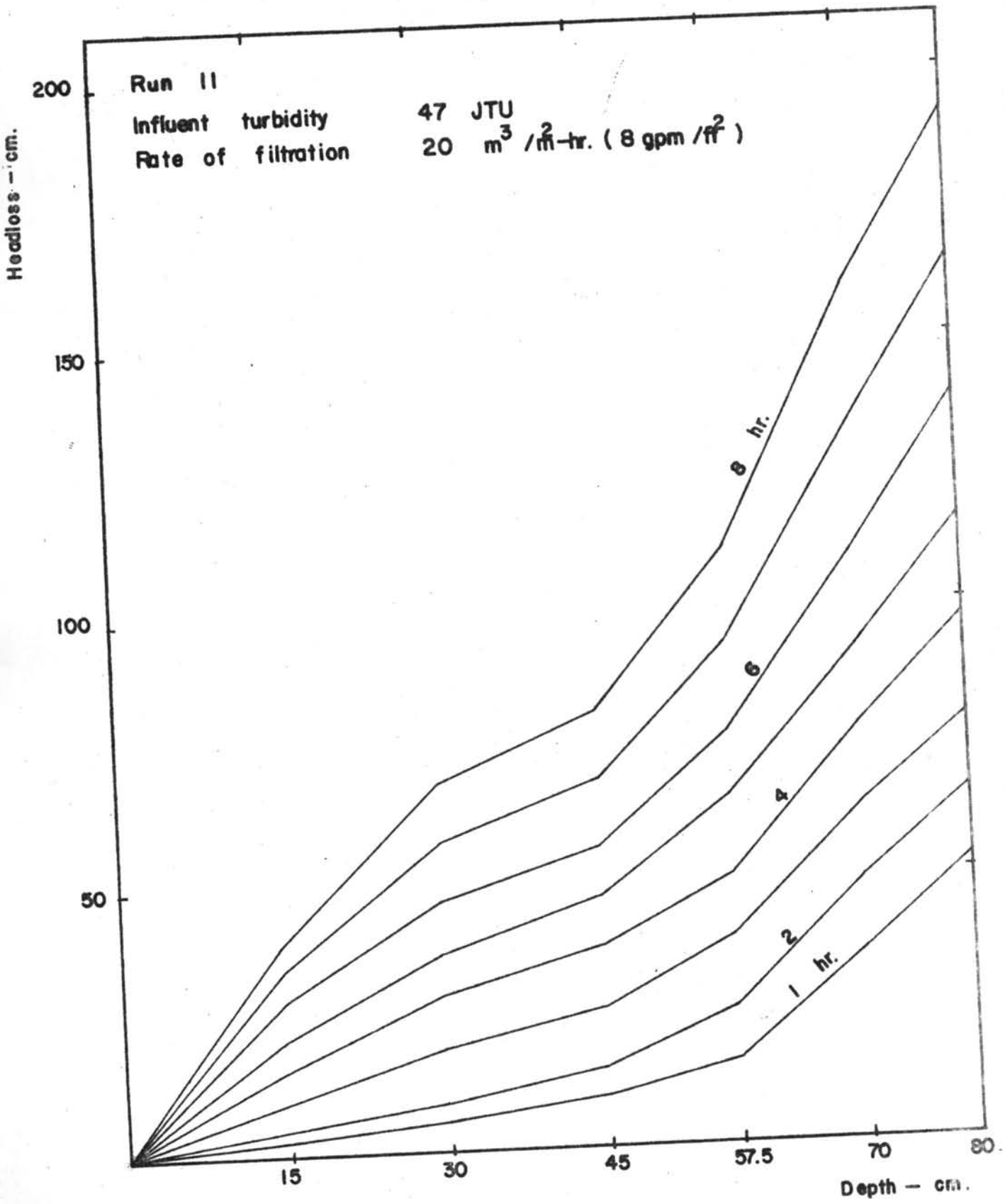

FIG. 16 HEADLOSS THROUGH MEDIA WITH TIME

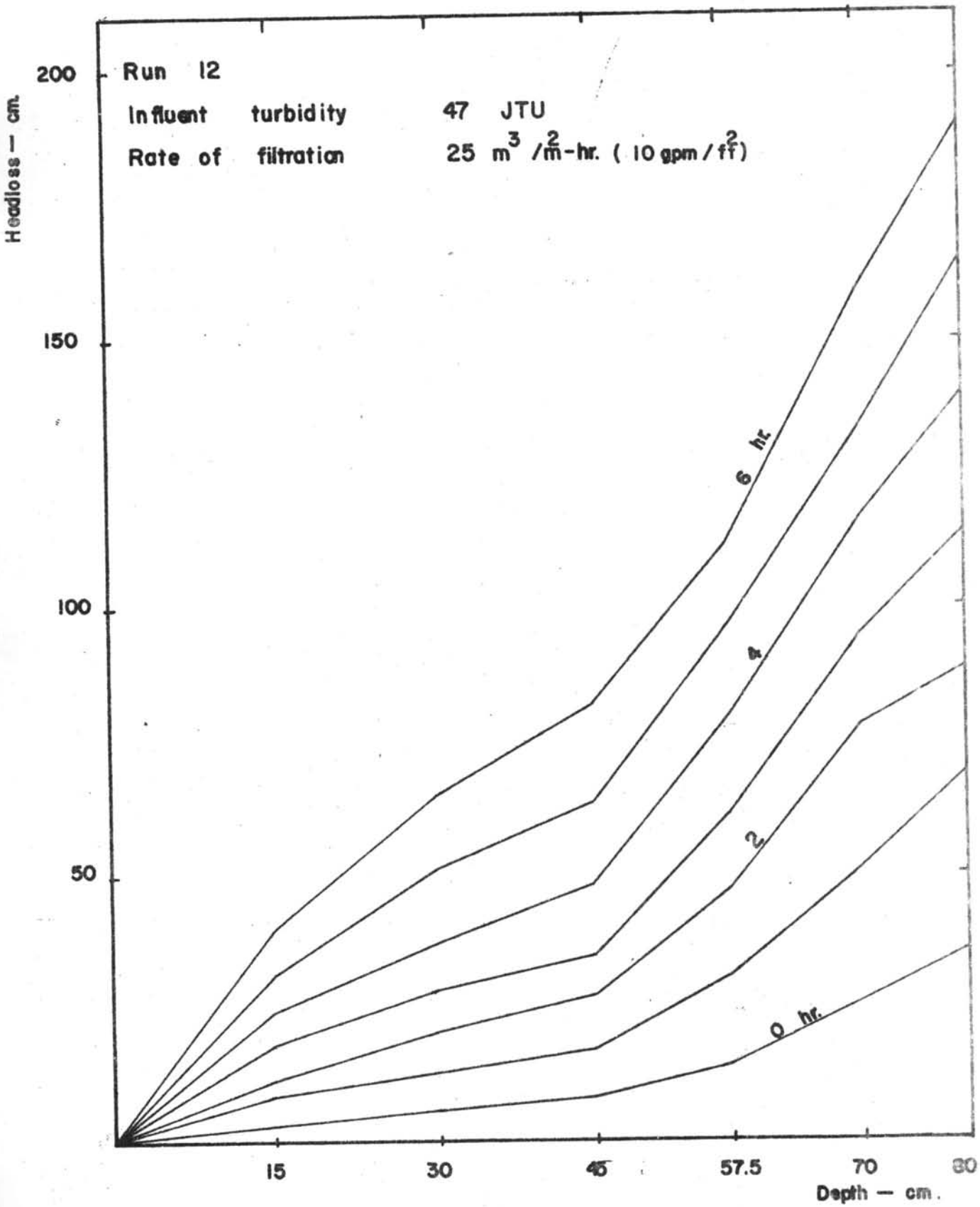

FIG. 17 HEADLOSS THROUGH MEDIA WITH TIME

The Lengths of Filter Run

Fig 18-20 represent graphs of total headloss in the filter bed plotting against time. The graphs of these different flow rares and turbidities of influent produced straight lines. This indicates that there are no surface skum formation, otherwise it would result in an exponential variation. Similar results with floc had also bee observed by CLEASBY and BAUMANN (1962). Increase in headloss showed the removal of flocculent suspension in the media bed. It could be seen from these Figures that, as the filtration rates were high, the steeper lines were obtained and resulted in the short length of filter run.

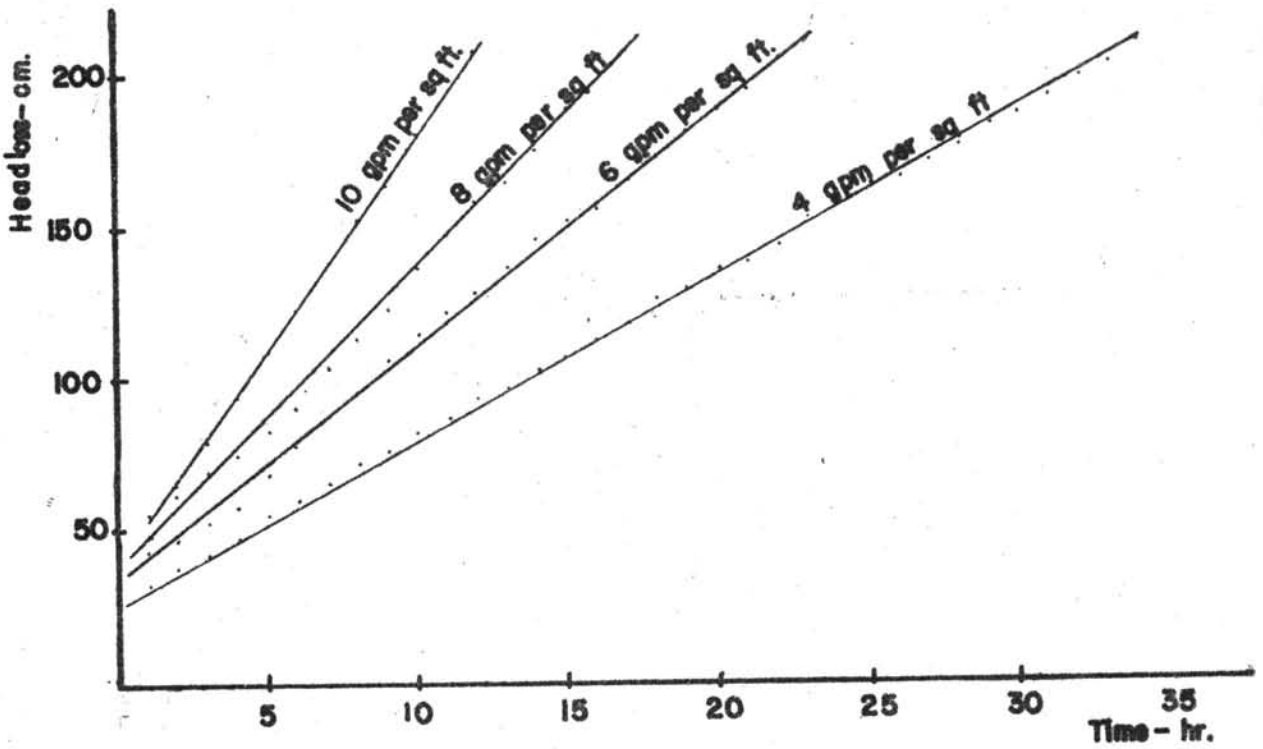

FIG. 18 TOTAL HEADLOSS & TIME FOR 10 JTU INFLUENT

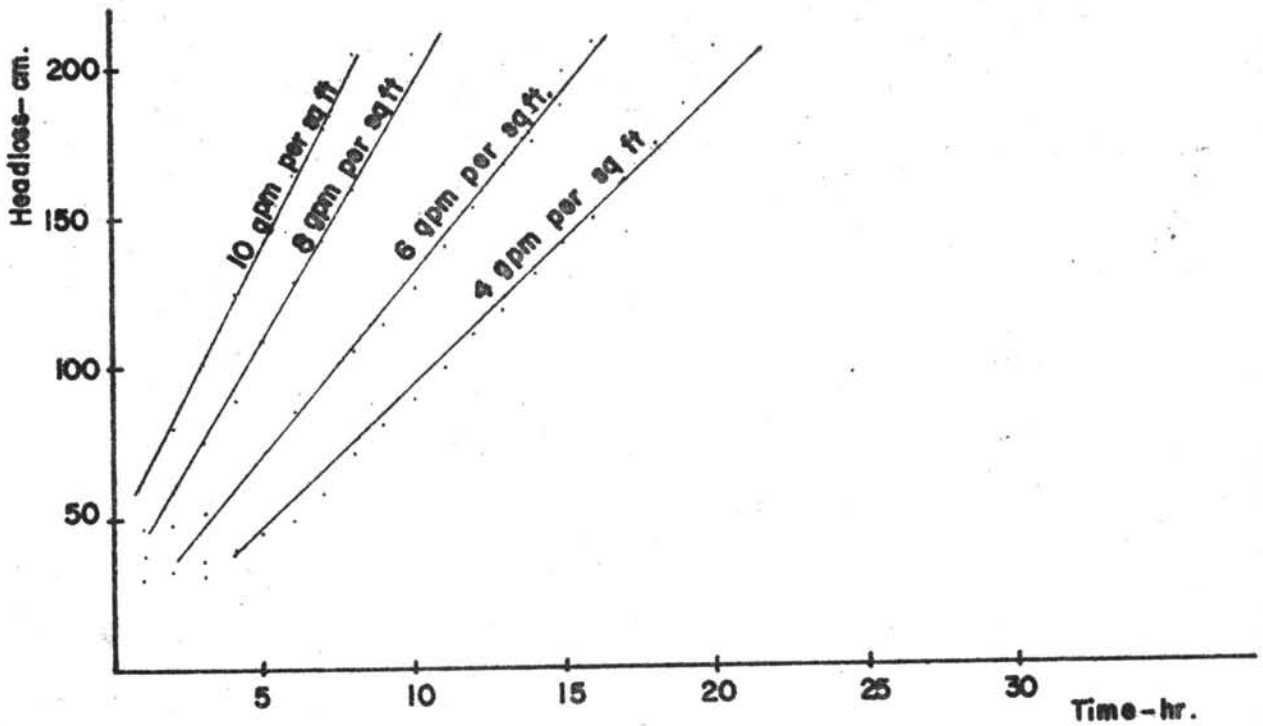

FIG. 19 TOTAL HEADLOSS & TIME FOR 25 JTU INFLUENT.

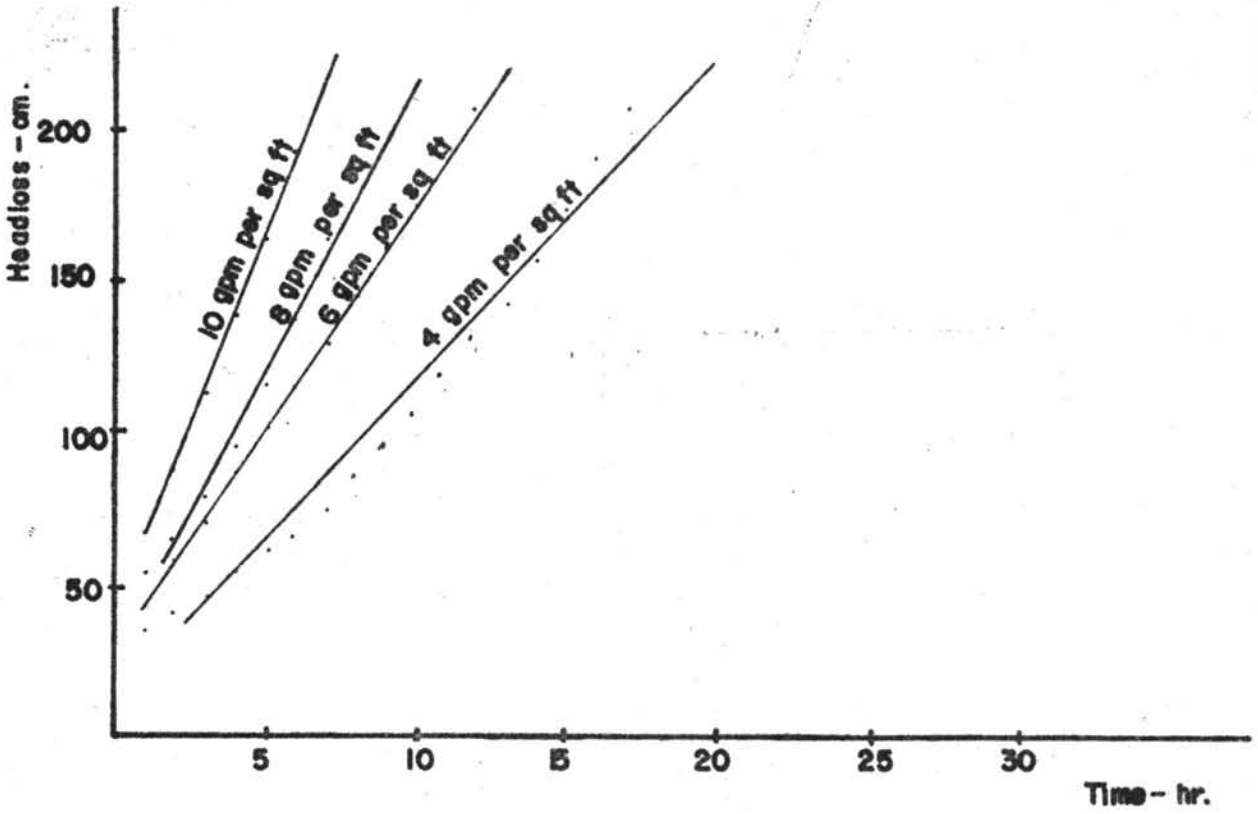

FIG. 20 TOTAL HEADLOSS & TIME FOR RAW WATER FROM SAM SEN CANAL (OF 47 JTU)

Filtered Water Quality

The filtered water turbidities at different flow rate and at different turbid influent were shown in Fig 21-23. The effluent for 10, 25, and 47 JTU influent adding with proper amounts of alum and the effluent of those without alum are compared to indicate the functions of the filter media bed. For the filtration rate of 4, 6, 8 gpm per sq ft (10, 15, 20 m^3/m^2-hr), the filtrate give the same range of turbidities but the rate of 10 gpm per sq ft (25 m^3/m^2-hr) gives noticable higher turbidity for all three sets of influent, especially for the 25 JTU influent in Fig 22. In the experiemtns, when the influent was added with alum, the effuent in terms of turbidity never exceeded 0.5 JTU. It appears that, without alum, the effluent of all filtration rates gives an unacceptable results, only about 40 per cent of turbidity being removed, while those adding with alum are removed approximate 99 per cent turbidity. From these Figures, it can be seen that, in order to get the best results of filrate, the coagulent must be added to the raw water to form floc because the filter media alone cannot screen the incoming suspended particles in the influent.

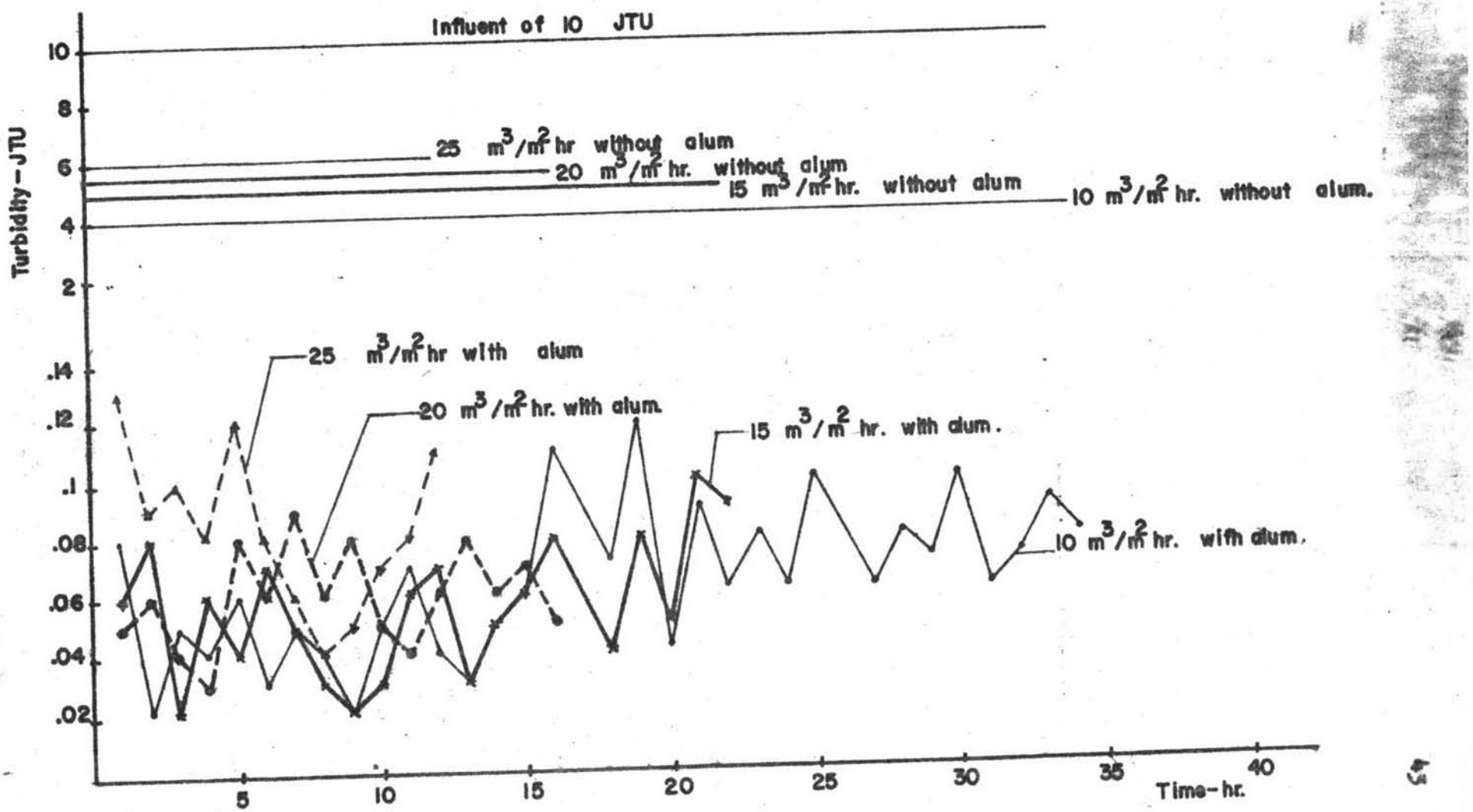

FIG. 21 COMPARISON OF EFFLUENT QUALITIES FOR 10 JTU INFLUENT.

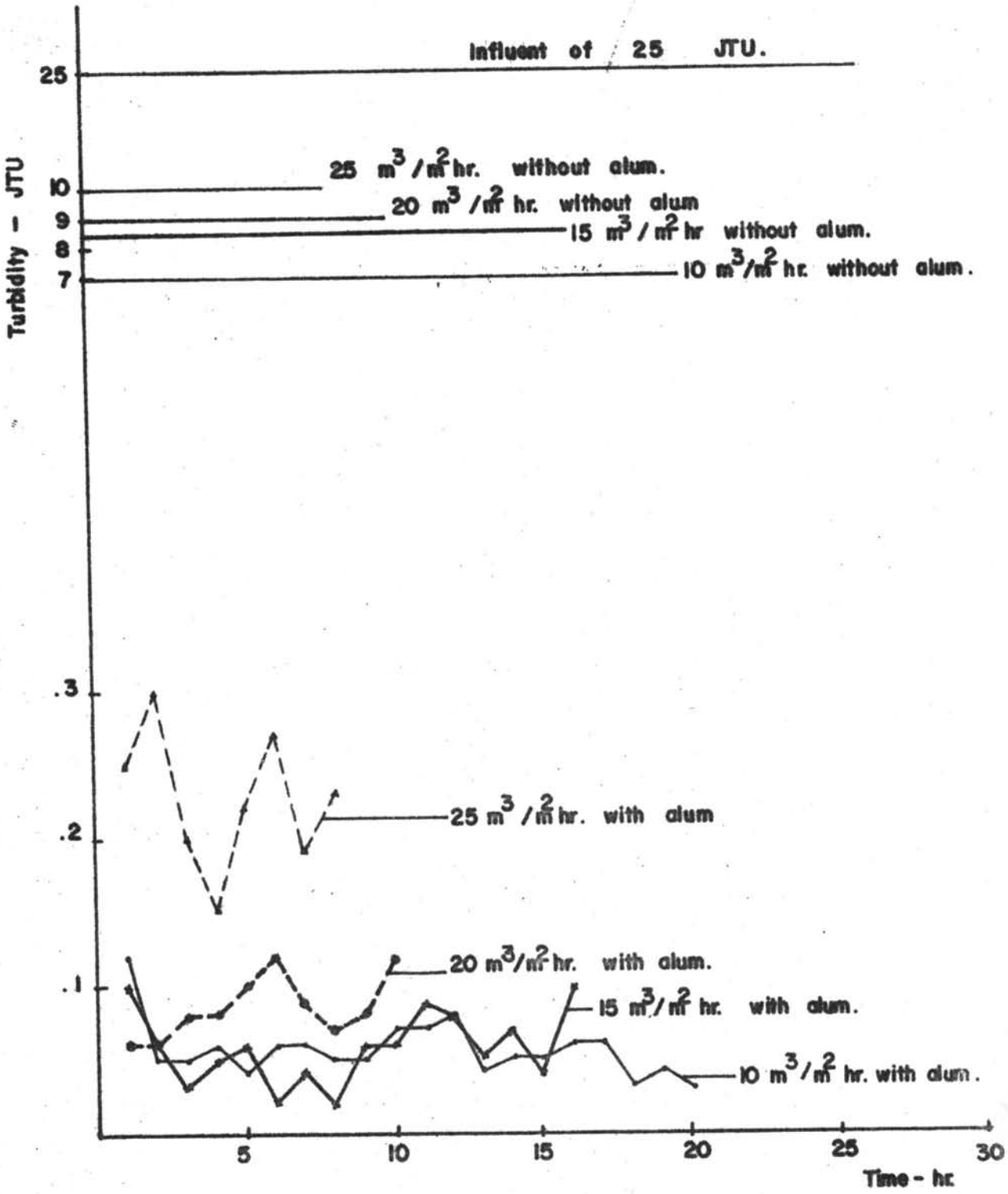

FIG. 22 COMPARISON OF EFFLUENT QUALITIES FOR 25 JTU INFLUENT

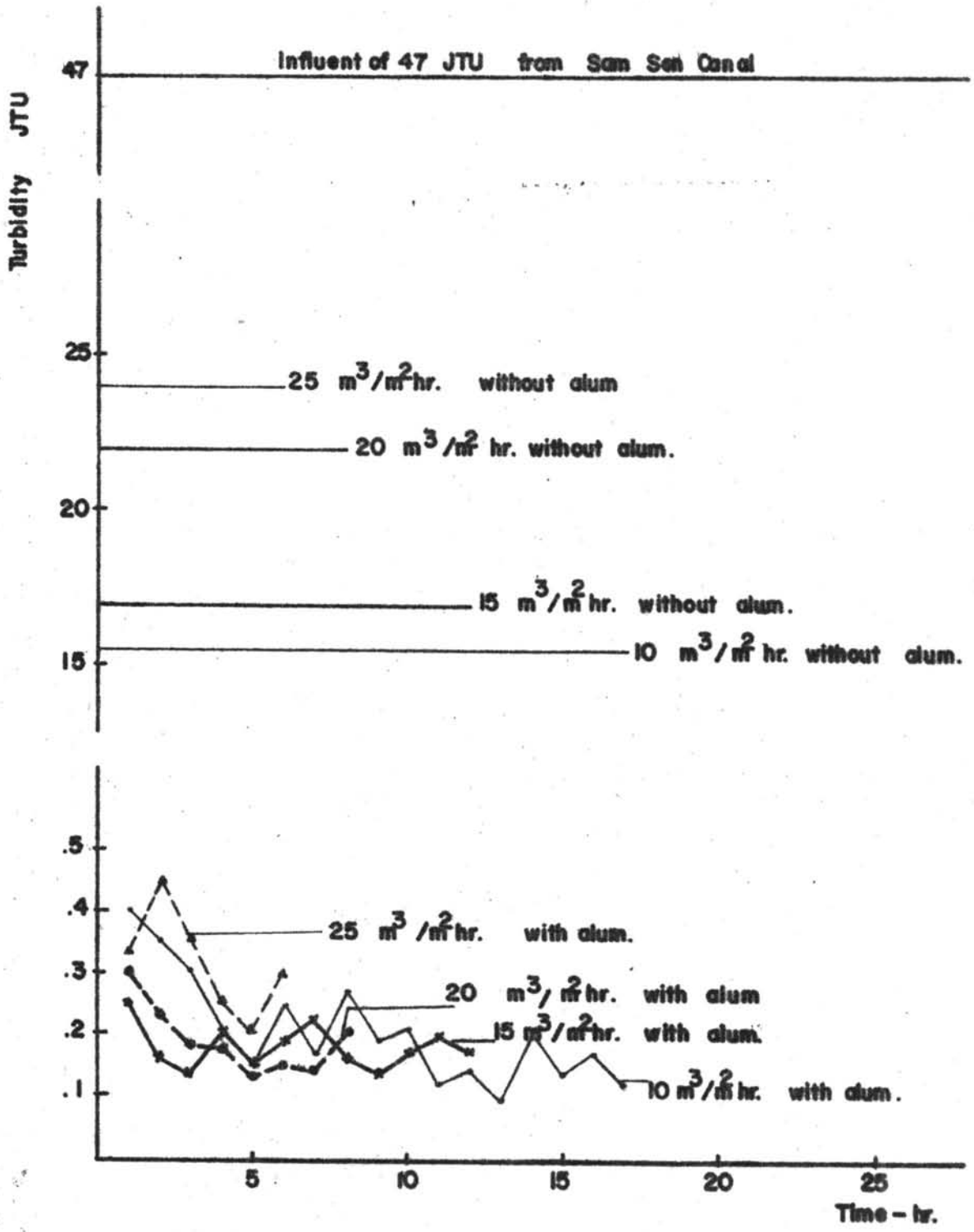

FIG. 23 COMPARISON OF EFFLUENT QUALITIES FOR 47 JTU INFLUENT.