



Irrigation Systems and Nutrient Management

Larry Schwankl

Irrigation Specialist, UC Cooperative Extension

559-646-6569 ljschwankl@ucanr.edu

Presentation will be available at: <http://ucanr.org/schwankl>

Irrigation Systems

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 - Source of water which can leach nutrients from the root zone.



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 - Source of nutrients through chemigation.
 - Source of water which can leach nutrients from the root zone.
 - Rainfall



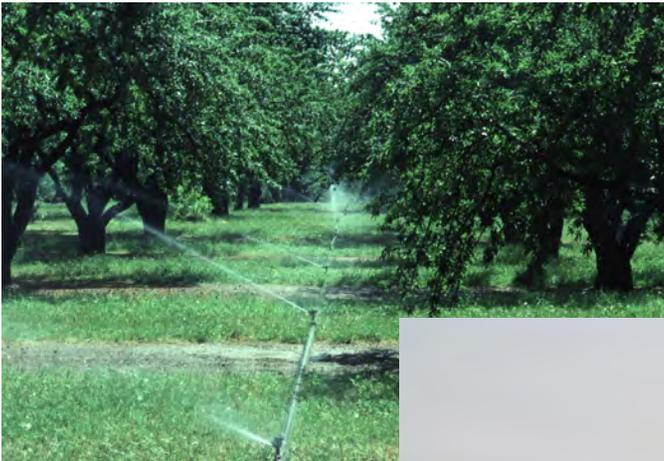
Irrigation Systems

- Types of irrigation systems:
 - Surface irrigation – furrow and border strip



Irrigation Systems

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 - Surface irrigation – furrow and border strip.
 - Sprinkler irrigation



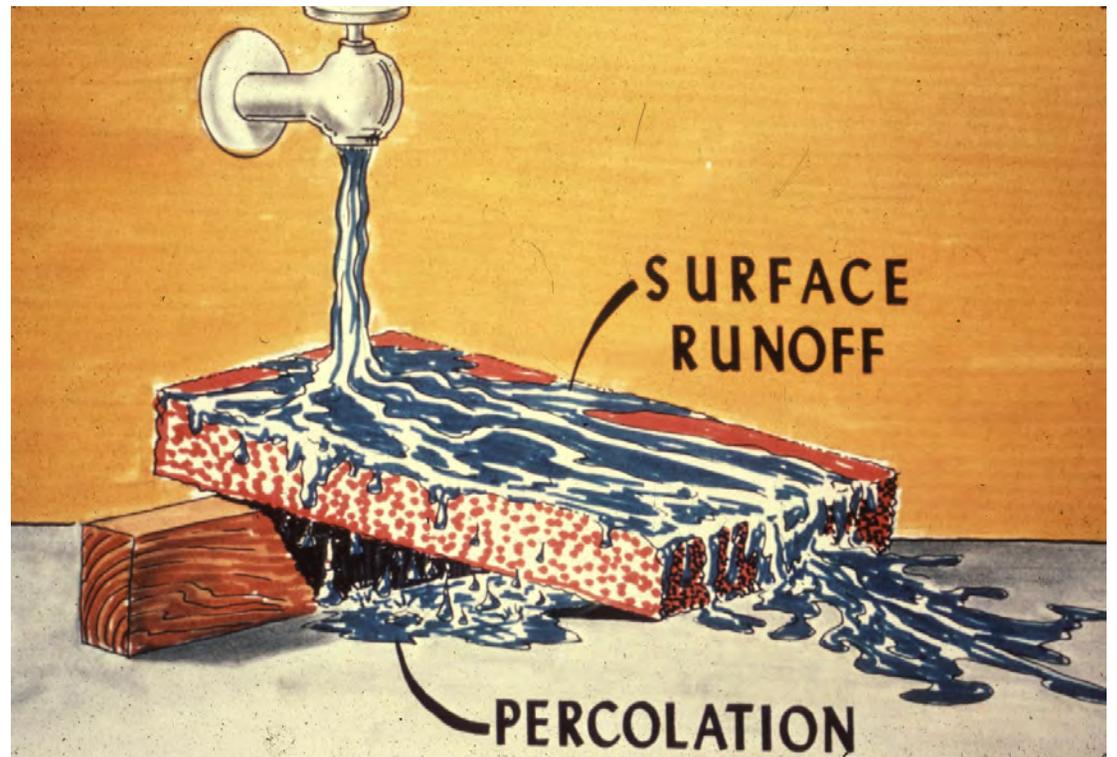
Irrigation Systems

- Types of irrigation systems:
 - Surface irrigation – furrow and border strip.
 - Sprinkler irrigation
 - Microirrigation



Irrigation Efficiency

- Measure of how much of the applied water goes to “beneficial uses”.
- The major beneficial use is to supply plant water needs (ET)



Surface Irrigation

- Water losses can be from deep percolation and tailwater runoff.



Surface Irrigation

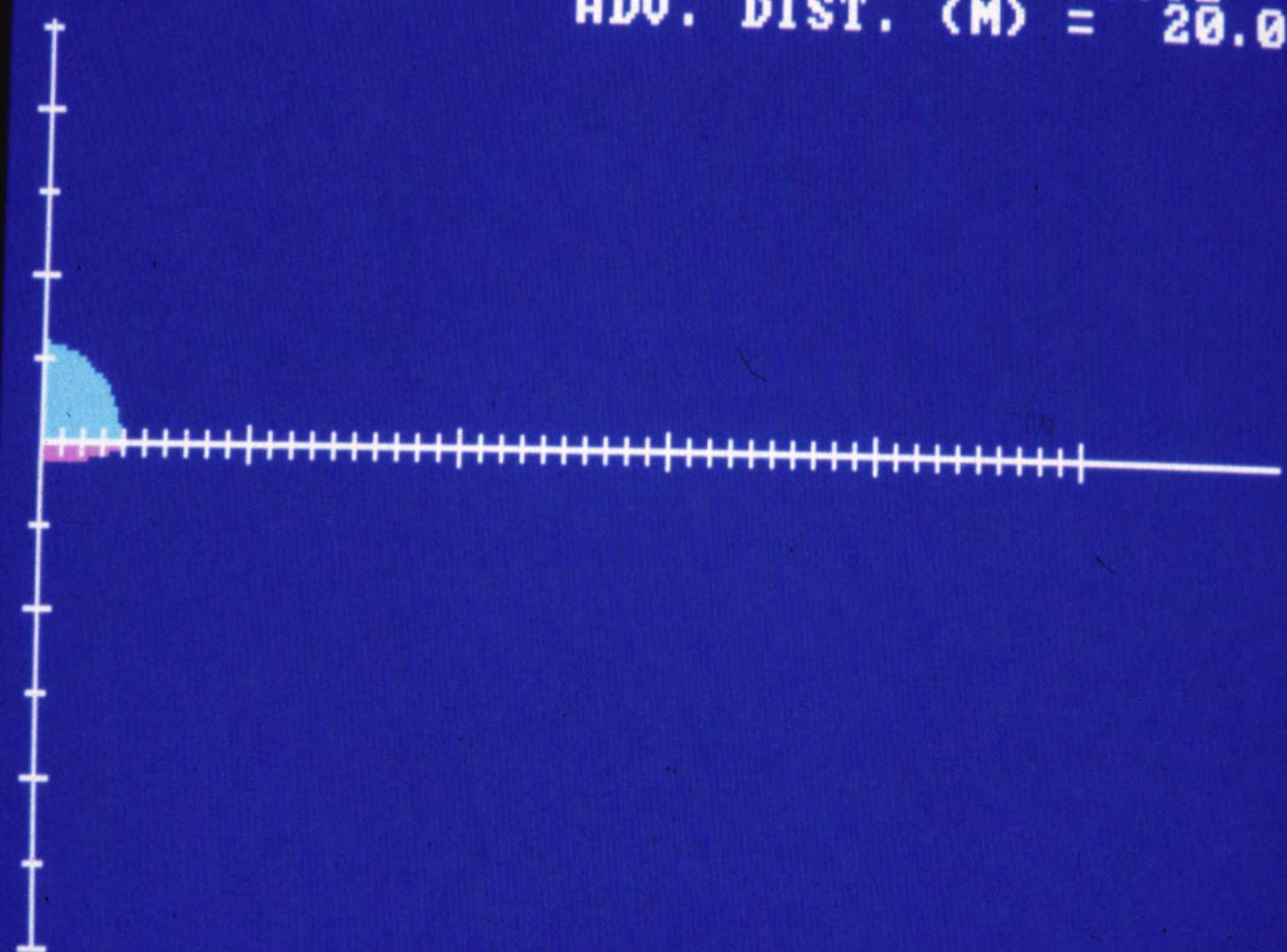
- Losses can be from deep percolation and tailwater runoff.
 - Minimize runoff losses by Tailwater Return Systems.



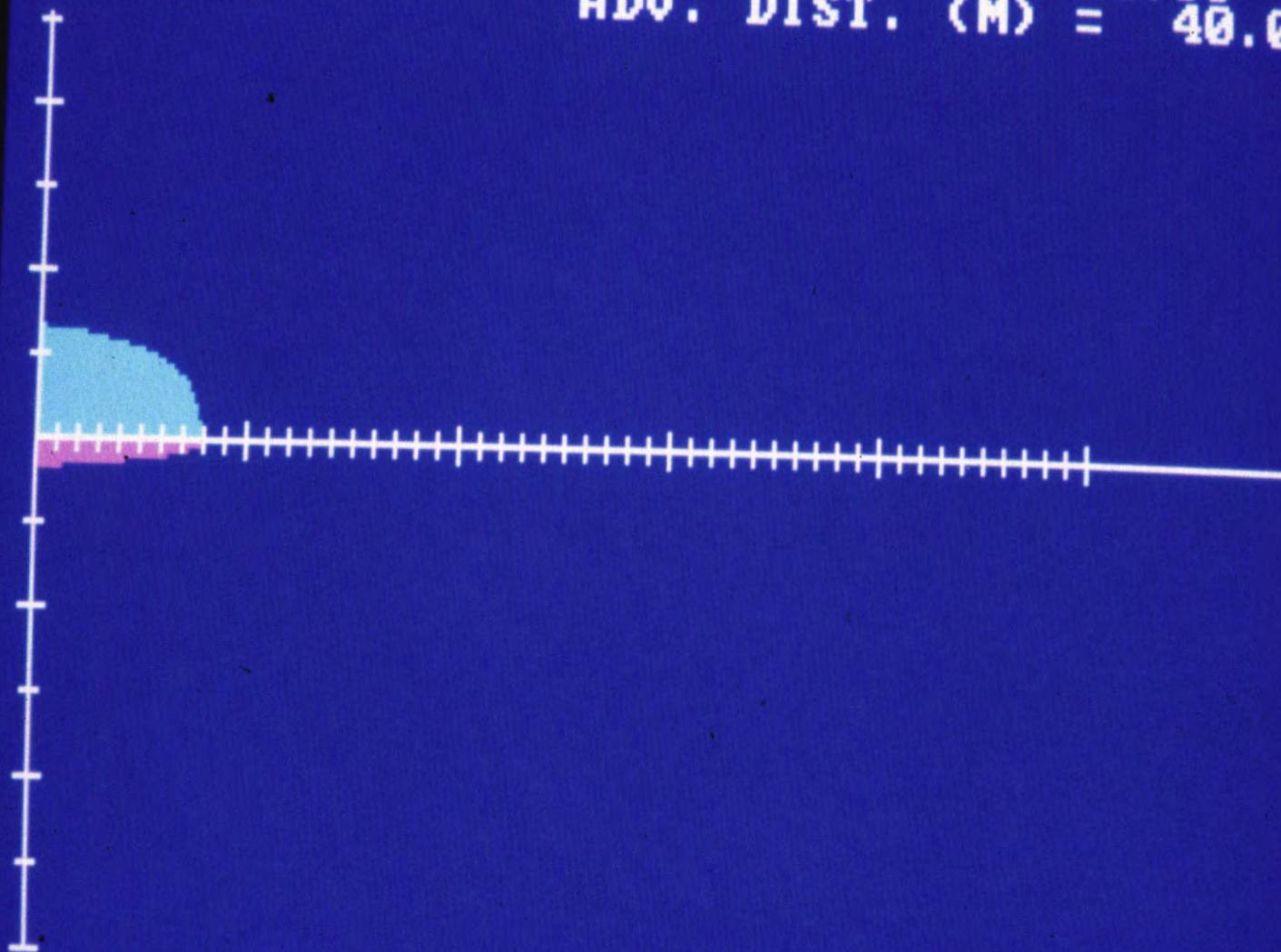
Surface Irrigation

- Losses can be from deep percolation and tailwater runoff.
 - Minimize runoff losses by Tailwater Return Systems.
 - Deep percolation losses are a challenge for surface irrigation systems.

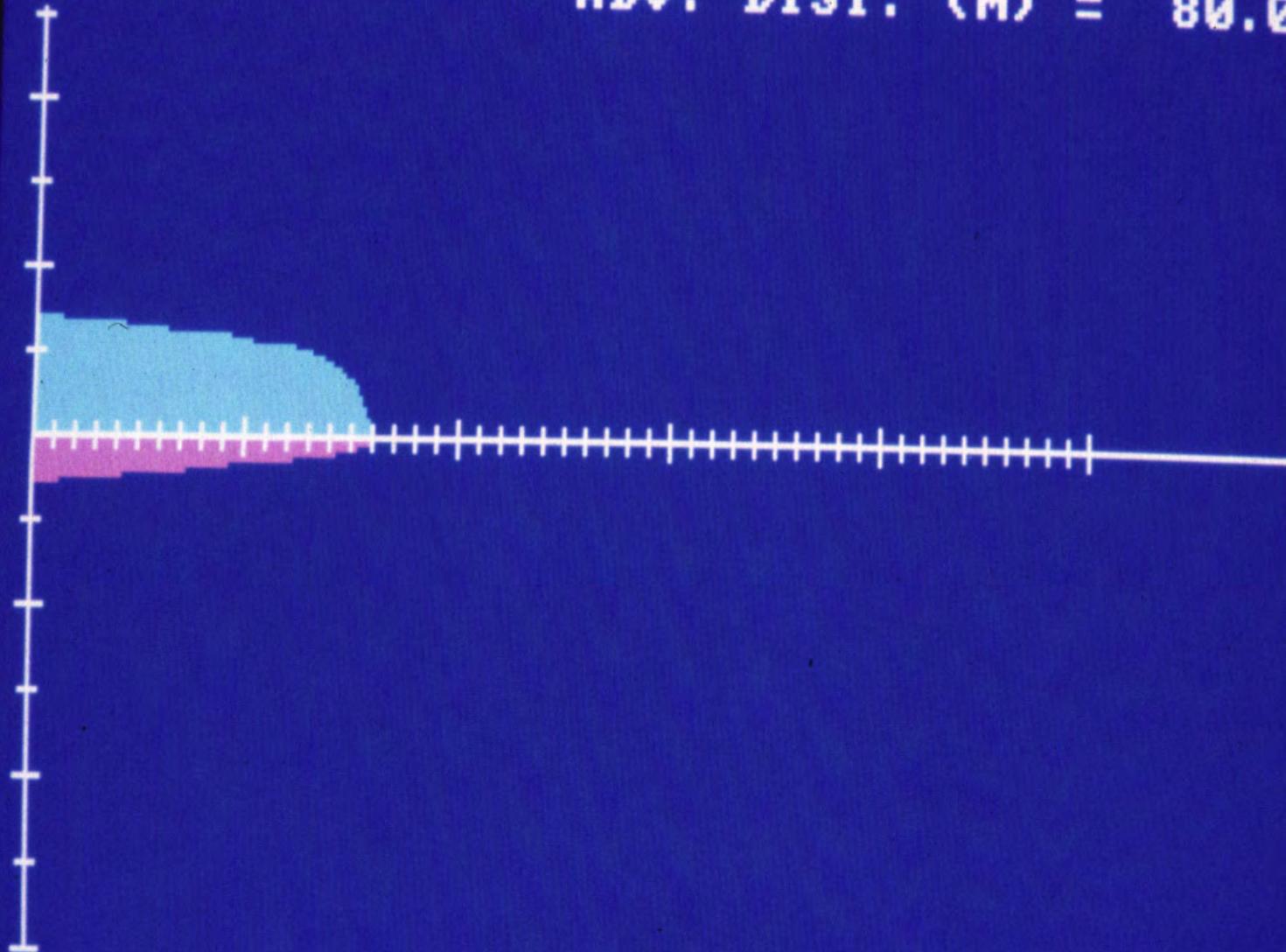
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ADV. DIST. (M) = 20.0



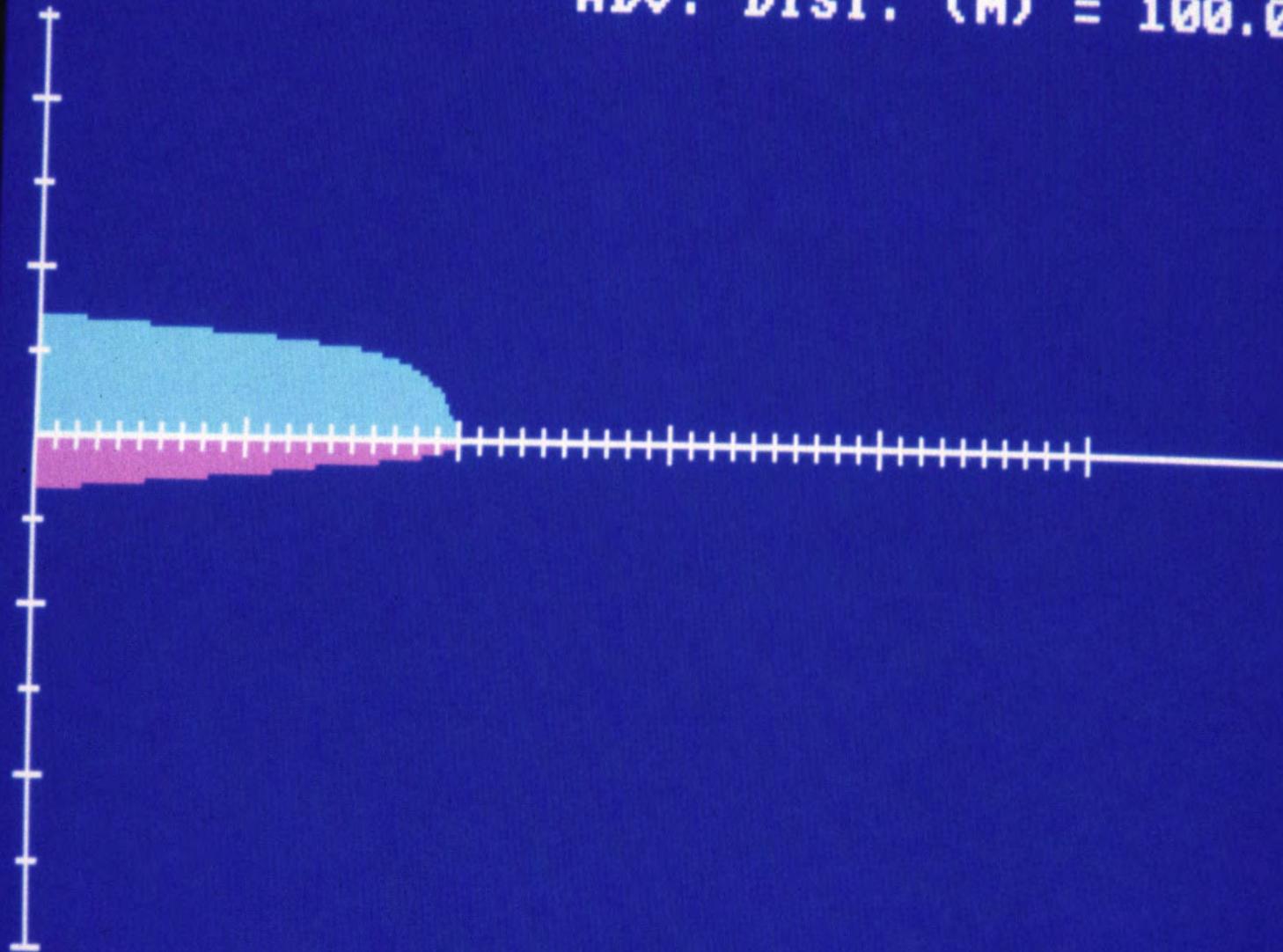
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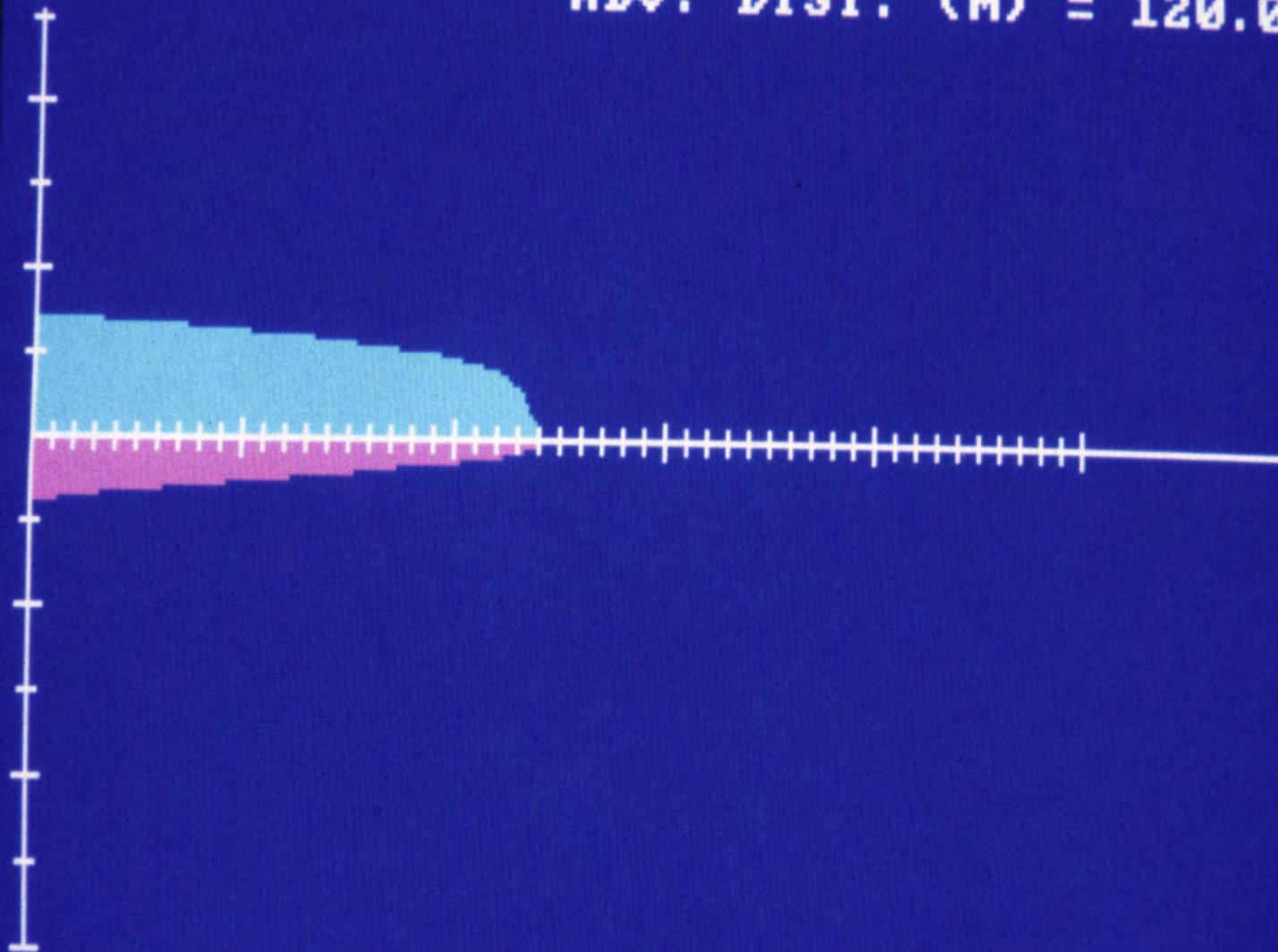
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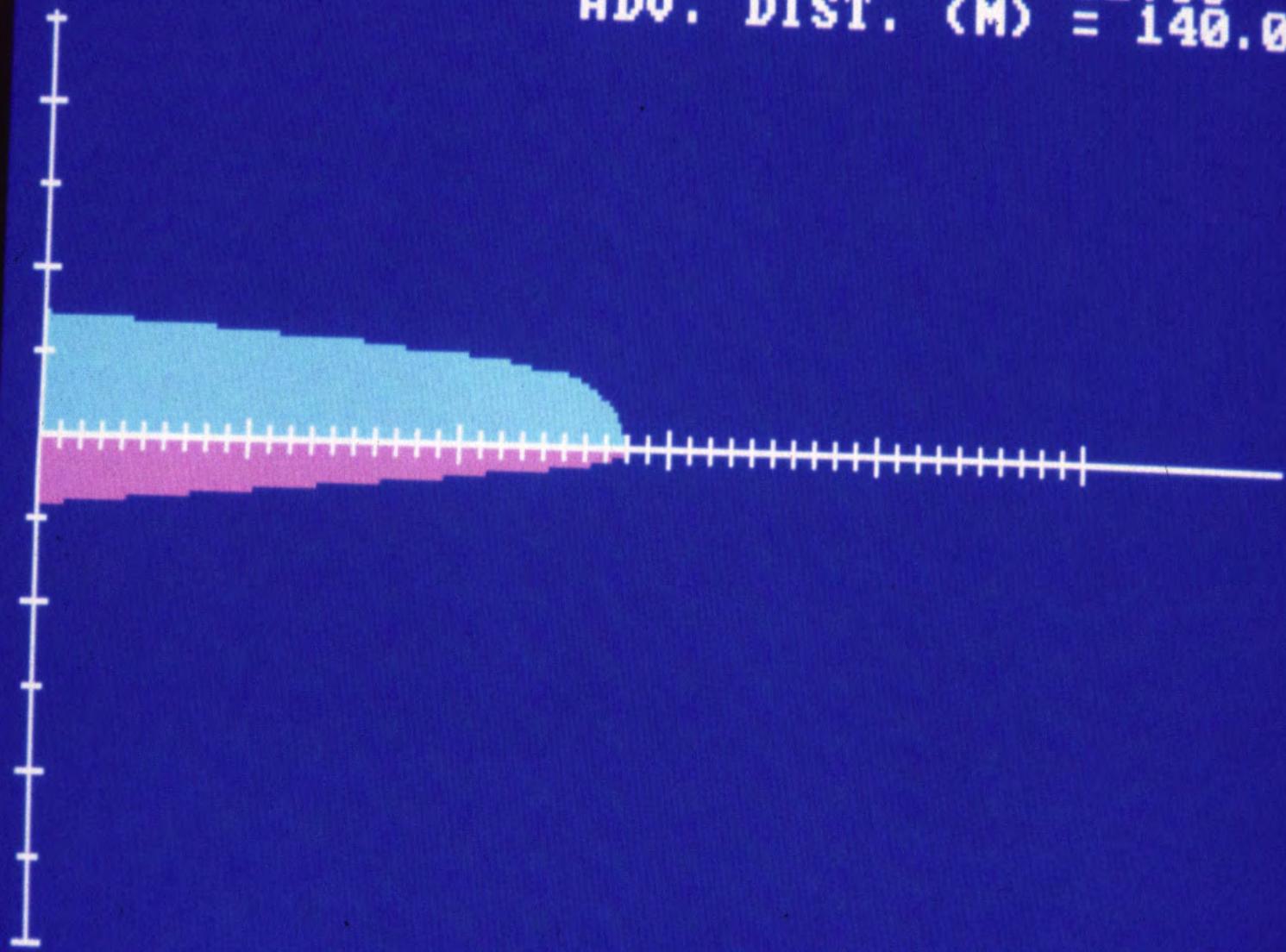
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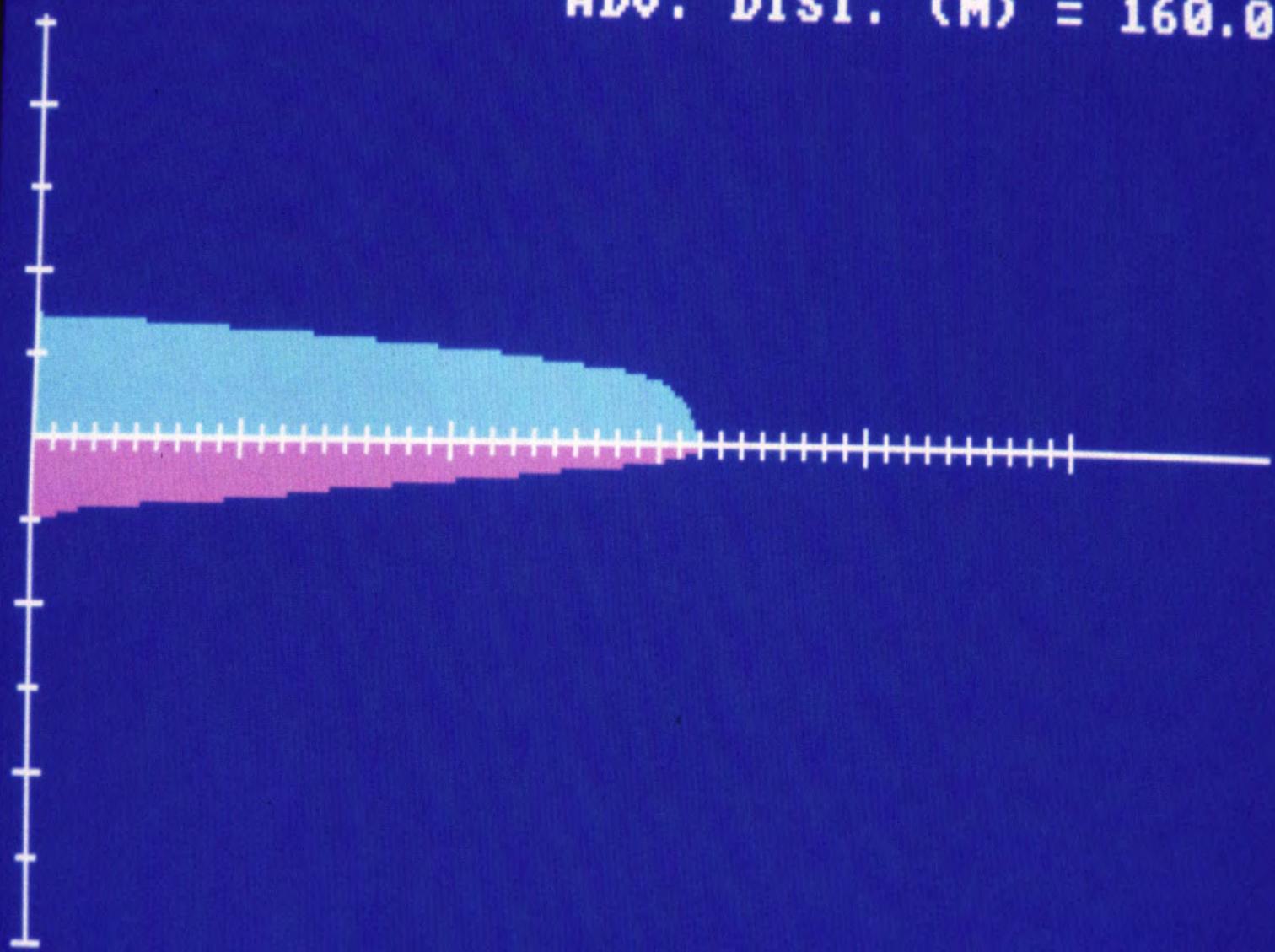
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ADV. DIST. (M) = 120.0



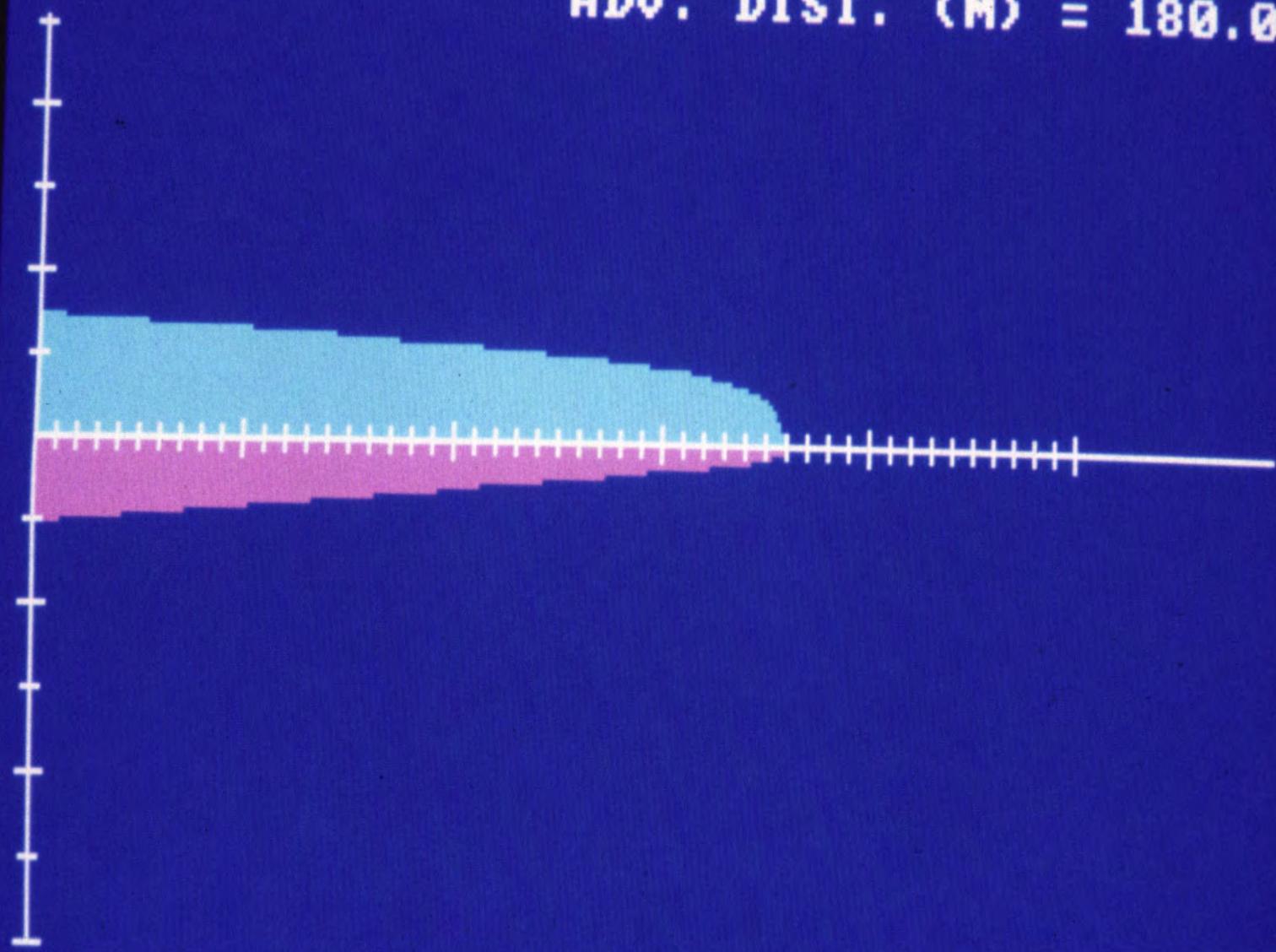
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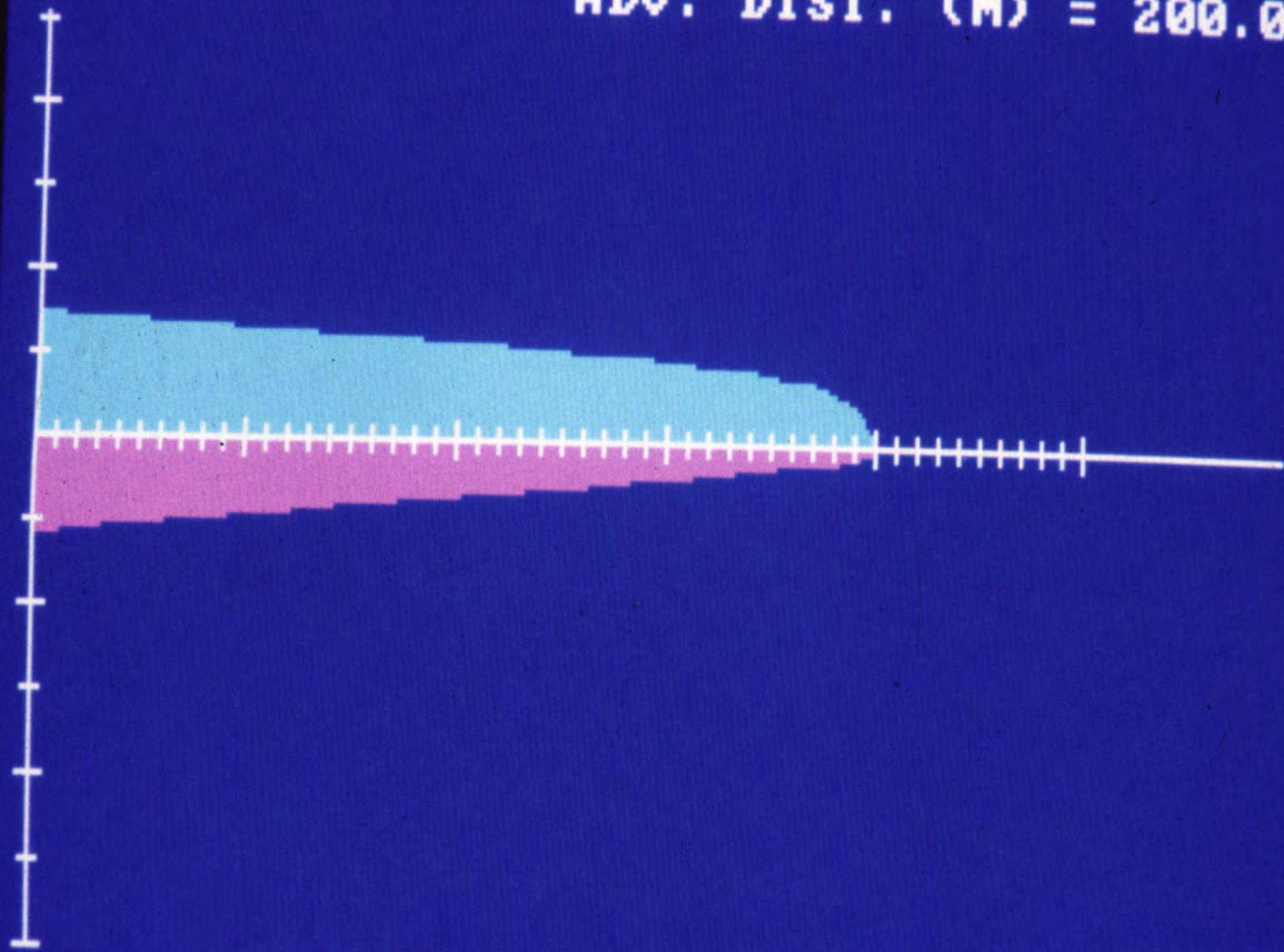
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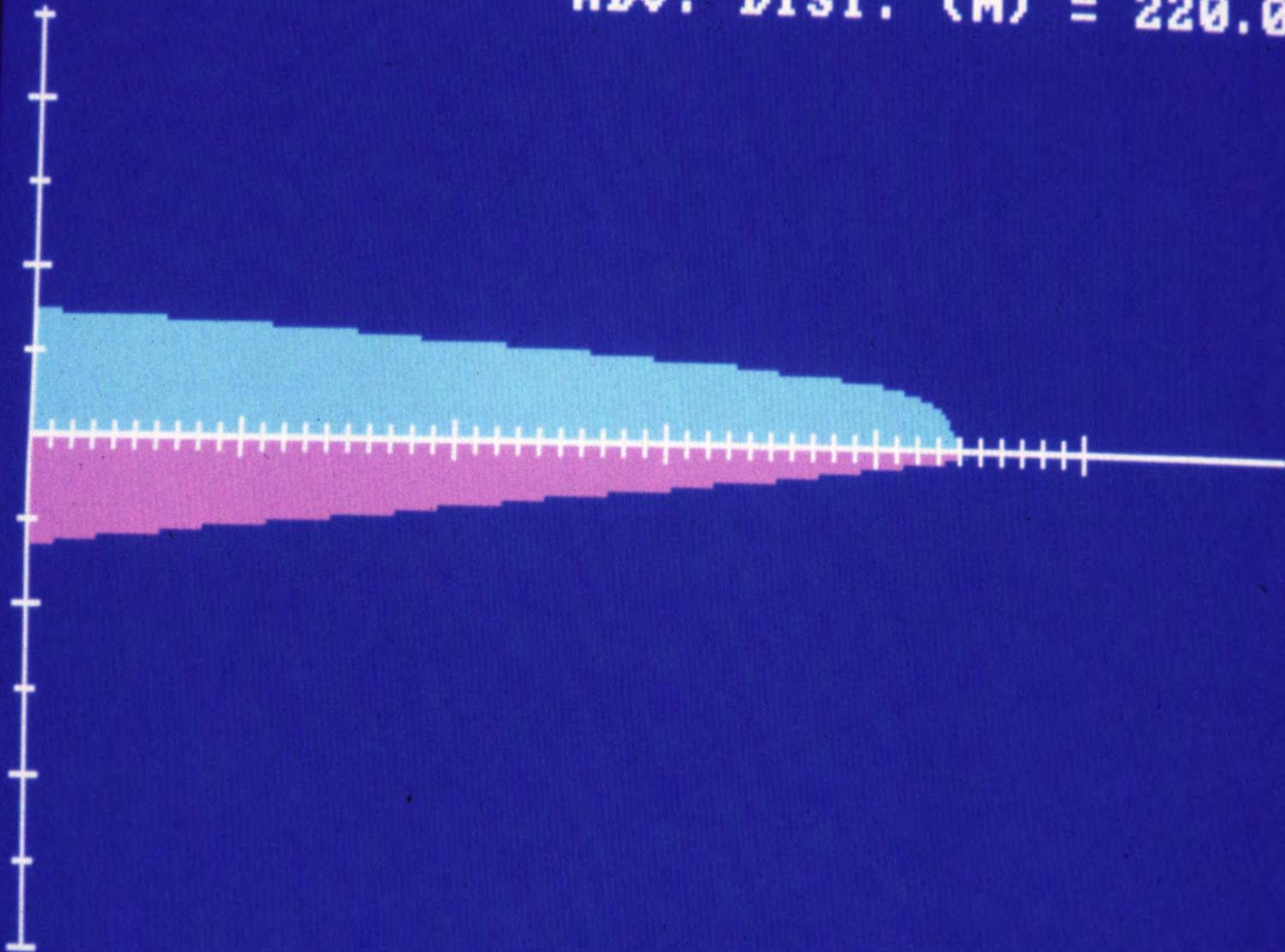
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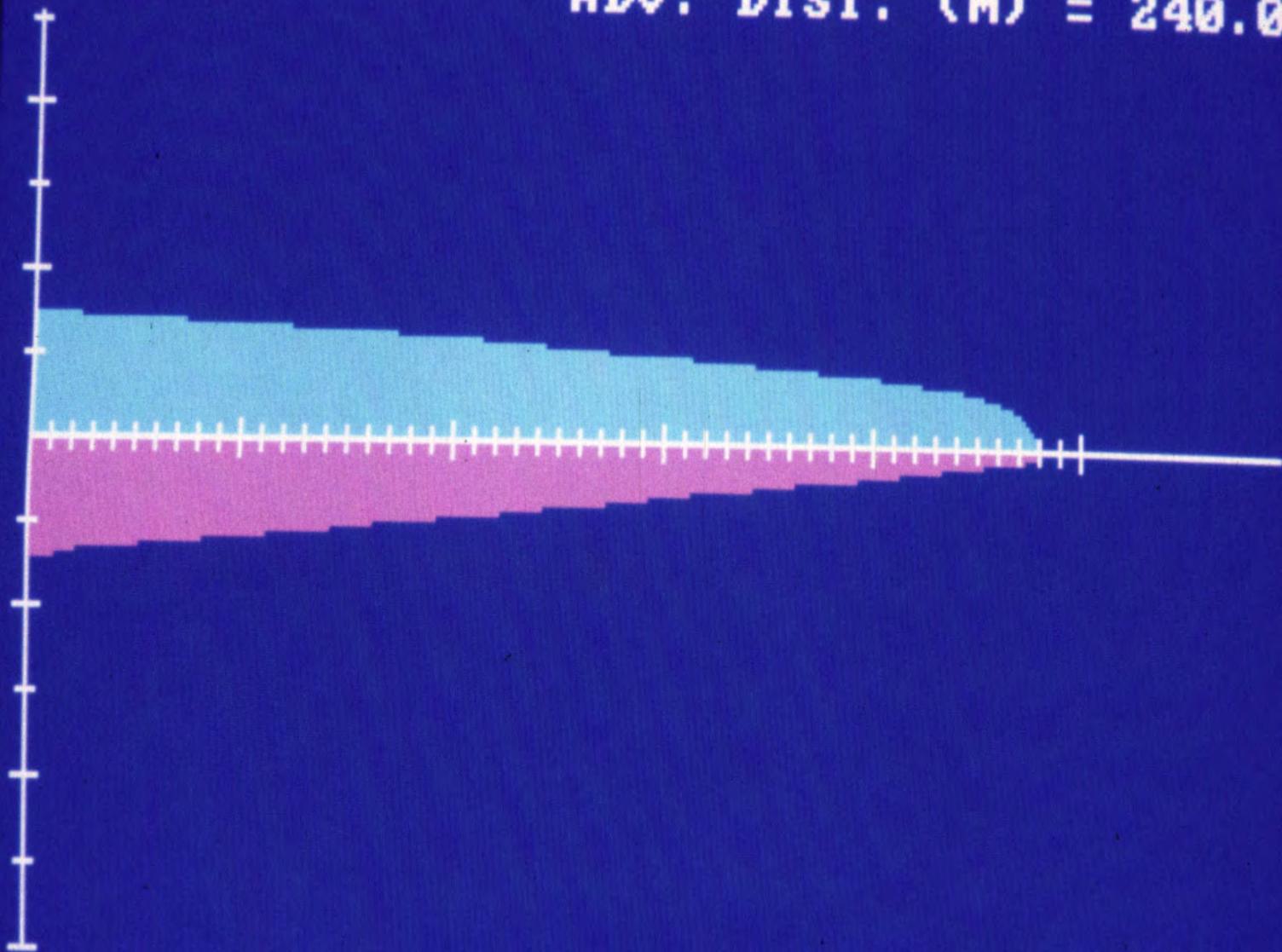
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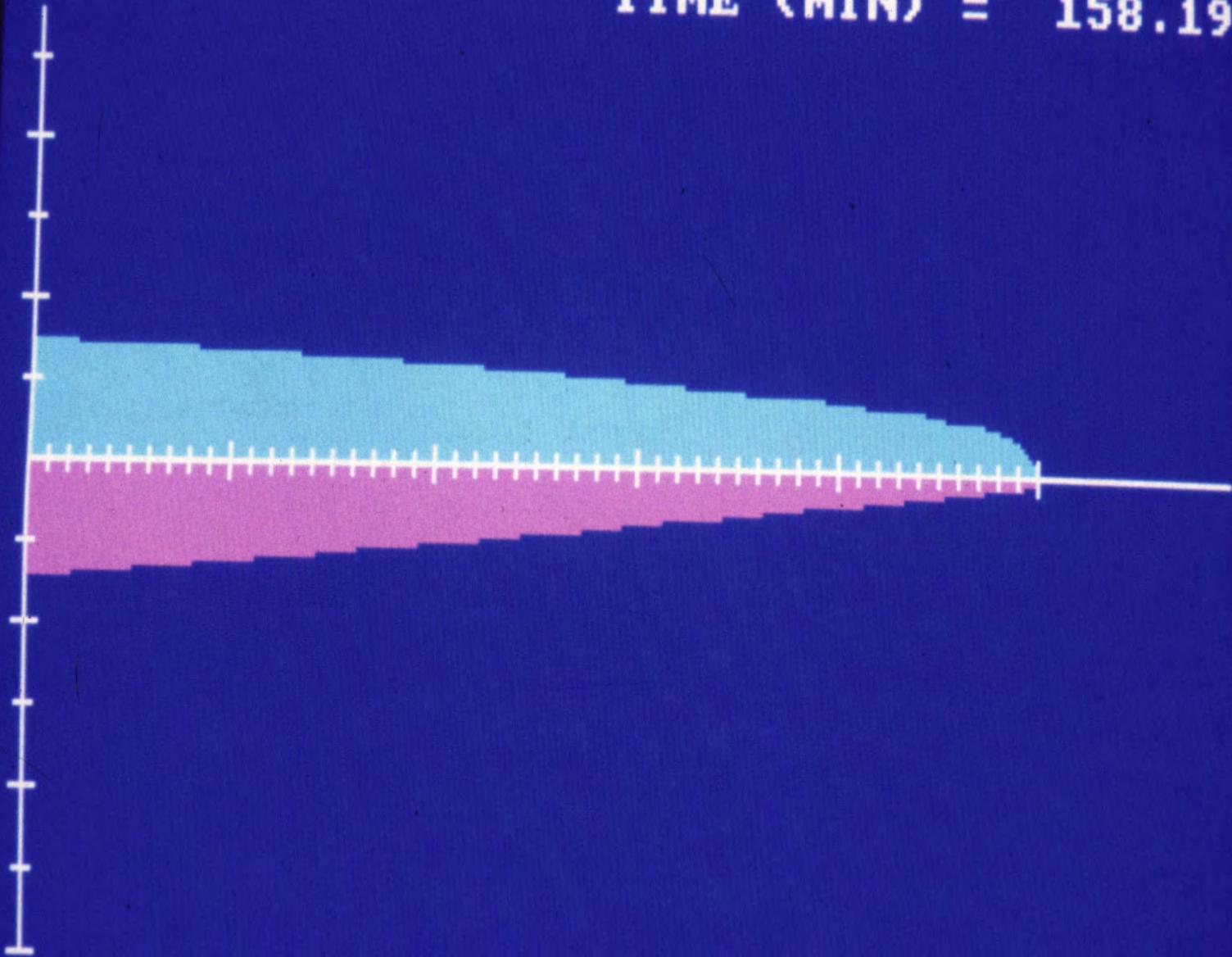
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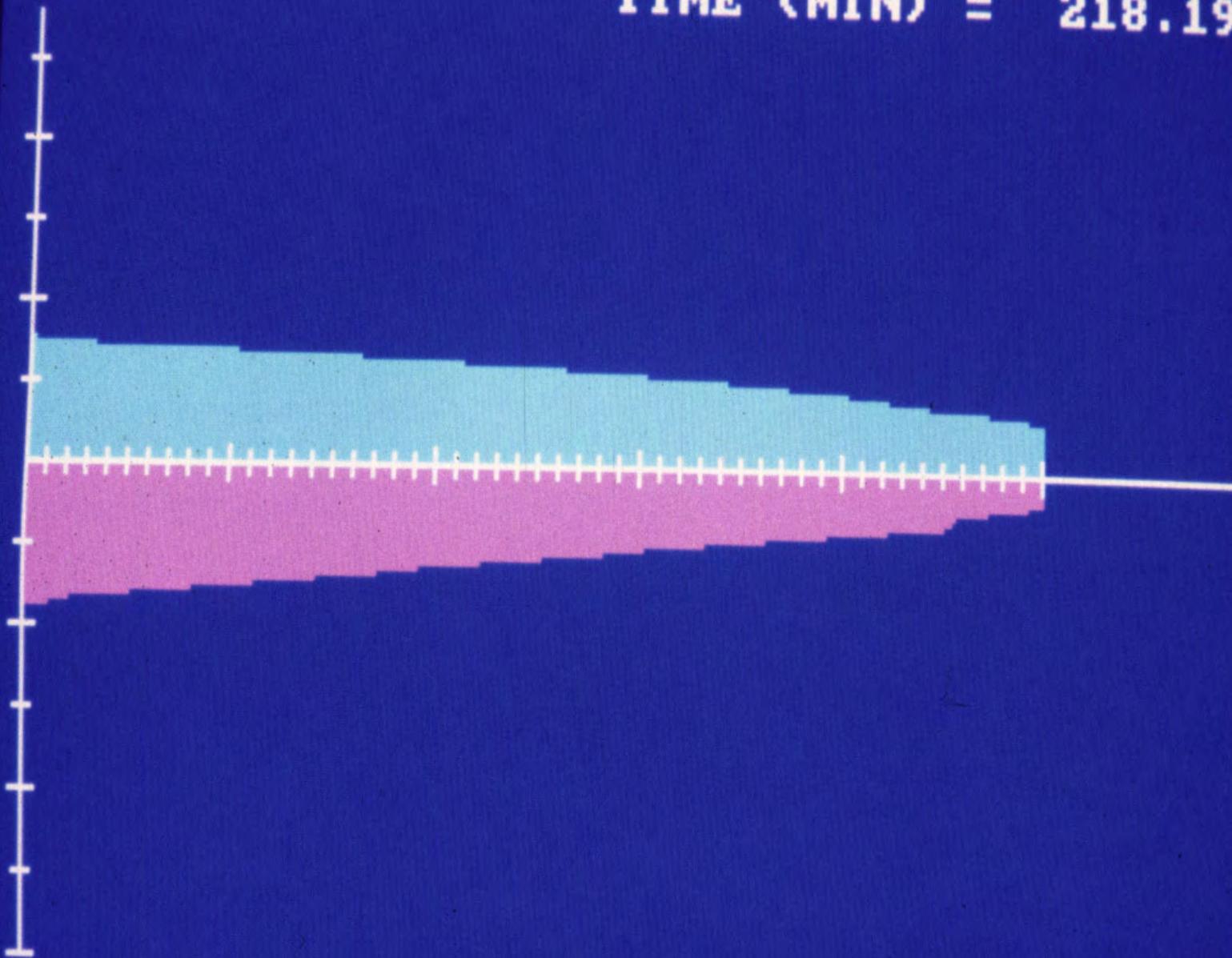
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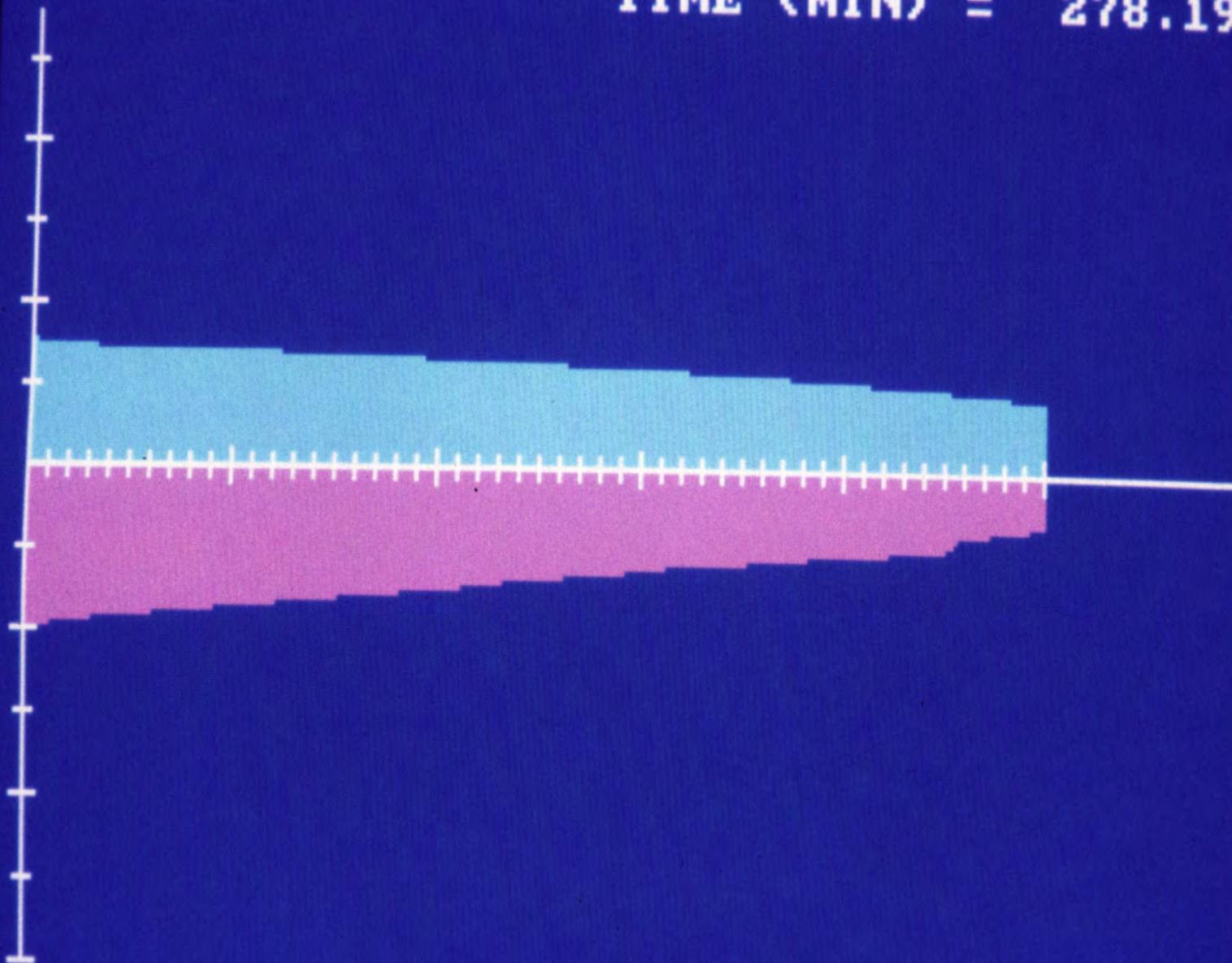
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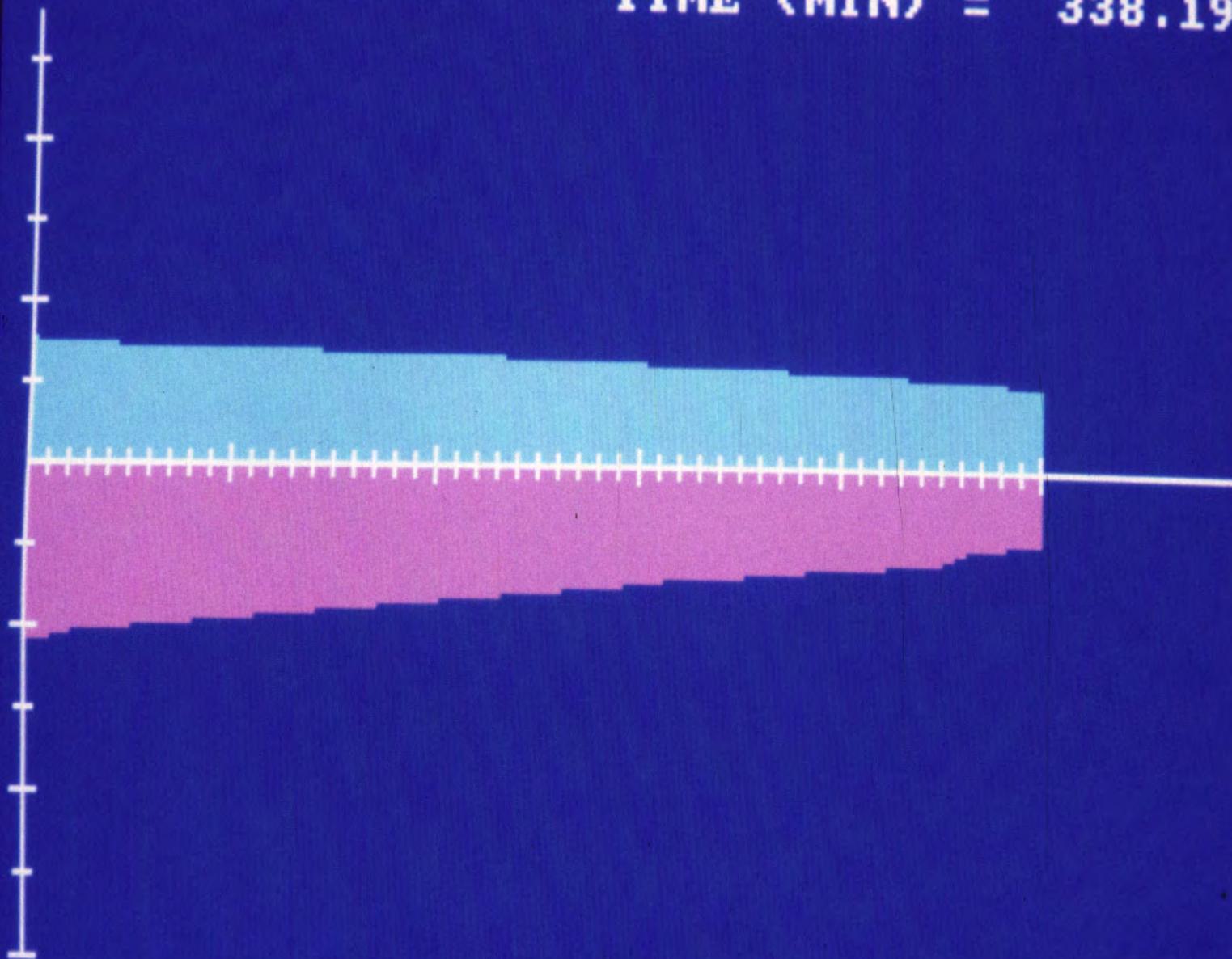
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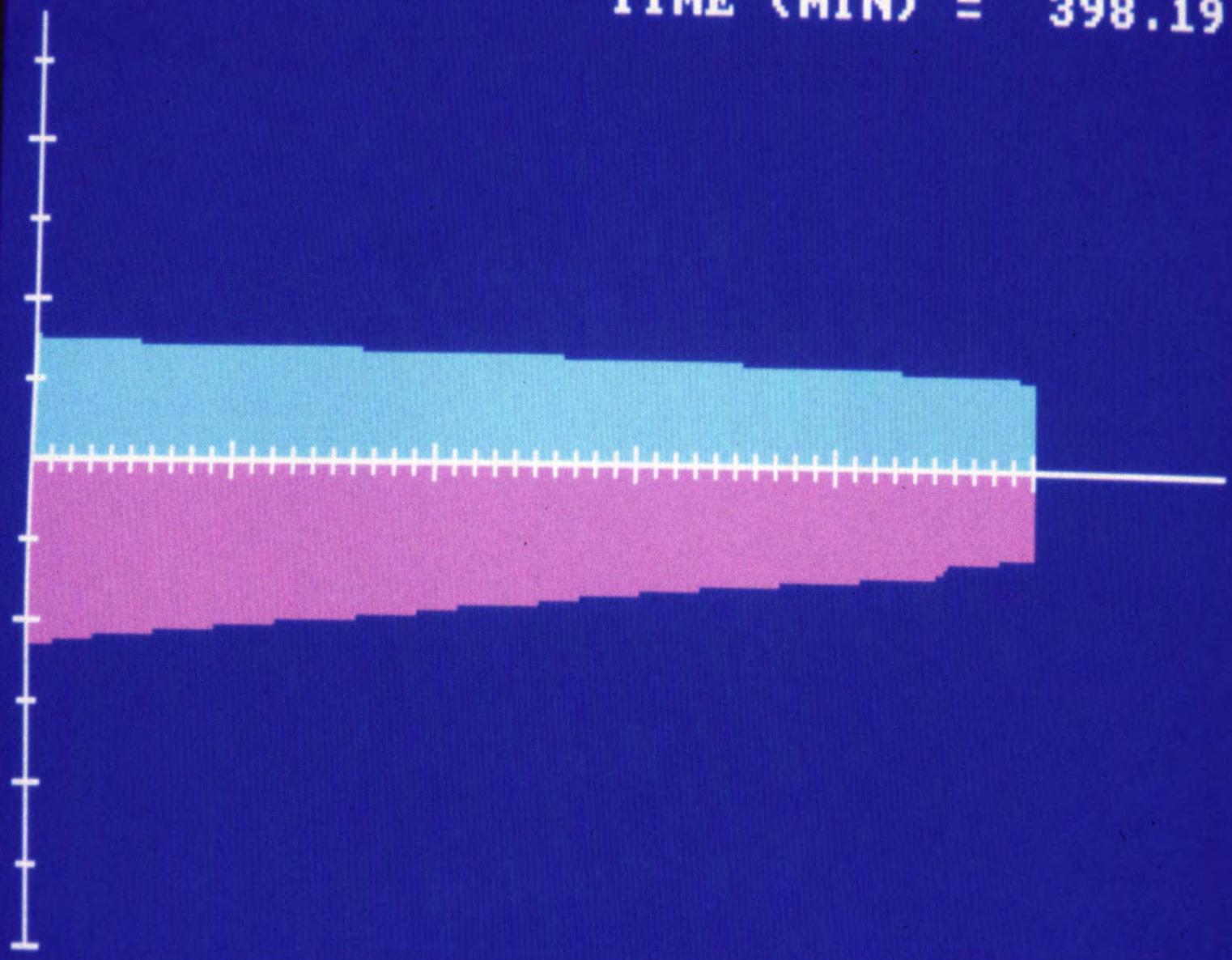
STORAGE PHASE
TIME (MIN) = 278.19



STORAGE PHASE
TIME (MIN) = 338.19

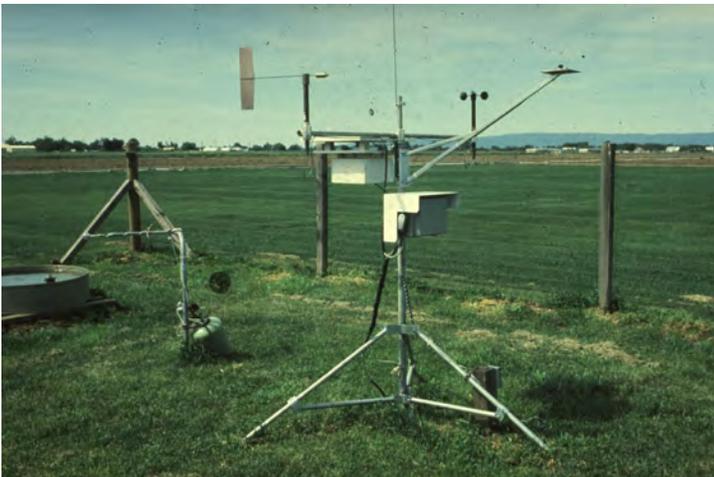


STORAGE PHASE
TIME (MIN) = 398.19



Surface Irrigation

- Losses can be from deep percolation and tailwater runoff.
 - Minimize runoff losses by Tailwater Return Systems.
 - Deep percolation losses can be reduced by;
 - Irrigating the right amount at the right time (irrigation scheduling)



Surface Irrigation

- Losses can be from deep percolation and tailwater runoff.
 - Minimize runoff losses by Tailwater Return Systems.
 - Deep percolation losses can be reduced by;
 - Irrigating the right amount at the right time (irrigation scheduling)
 - Having a well designed system (right length field, right flow rate, etc.)

Surface Irrigation

- Losses can be from deep percolation and tailwater runoff.
- Good management needed when added nutrients to irrigation water.



Sprinkler Irrigation

- Should be minimal runoff losses if designed correctly.



Sprinkler Irrigation

- Should be minimal runoff losses if designed correctly.
- Deep percolation losses can be minimized by good irrigation scheduling. Hardware gives better control.



Microirrigation Irrigation

- Minimal runoff.



Microirrigation Irrigation

- Minimal runoff.
- Deep percolation losses can be minimized with good irrigation scheduling. Again, hardware provides better control.



Irrigation - Summary

- If there is deep percolation associated with the irrigation, it can transport nutrients below the root zone.

Irrigation

- If there is deep percolation associated with the irrigation, it can transport nutrients to below the root zone.
- With fertigation, nutrients are applied with the irrigation water. Special care needs to be taken to make sure the nutrients stay in the root zone.

Questions?



Larry Schwankl

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