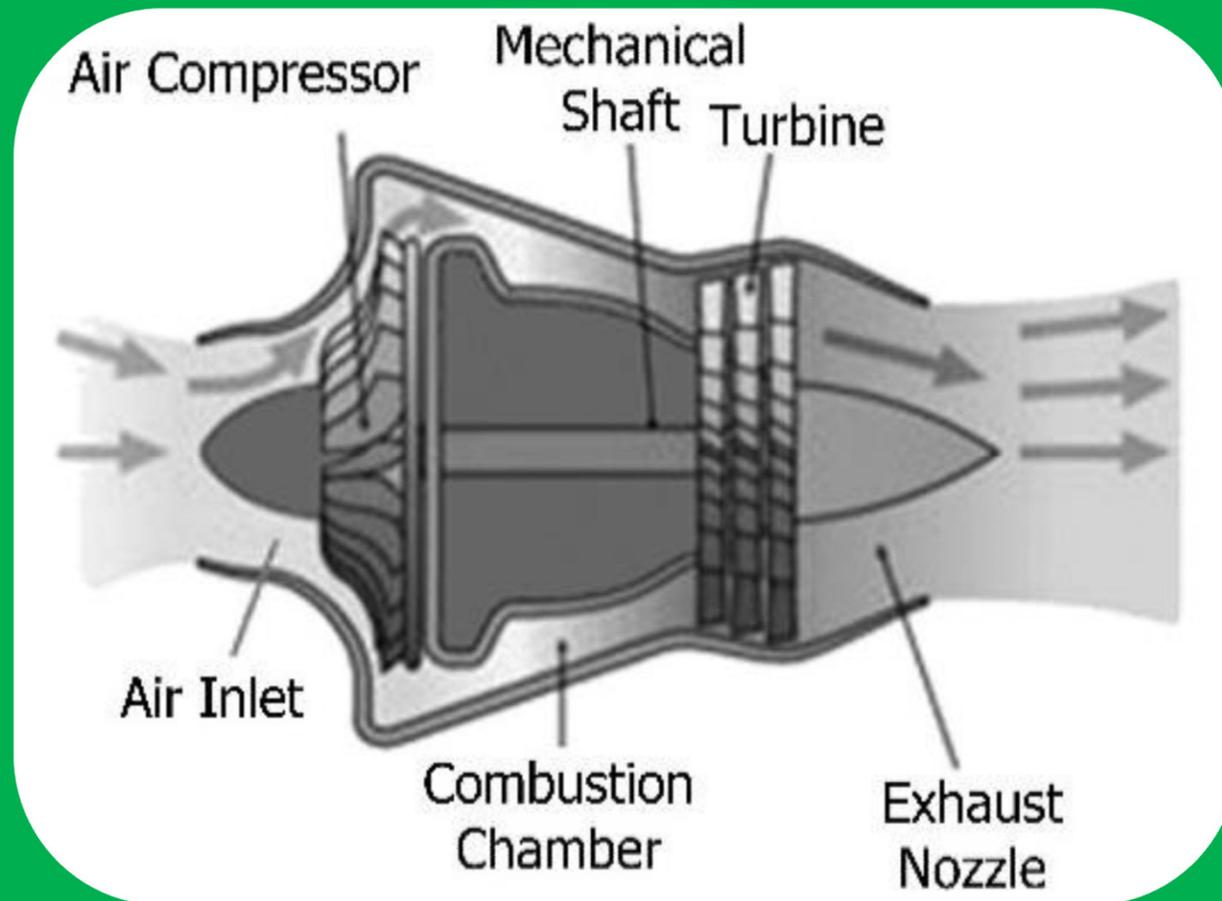




UNION PACIFIC'S

TURBINE ERA

For openers, how does a gas turbine operate?



So, now that we know how a turbine operates, how did the first turbines arrive on the UP?

### Statistics on these revolutionary turbines:

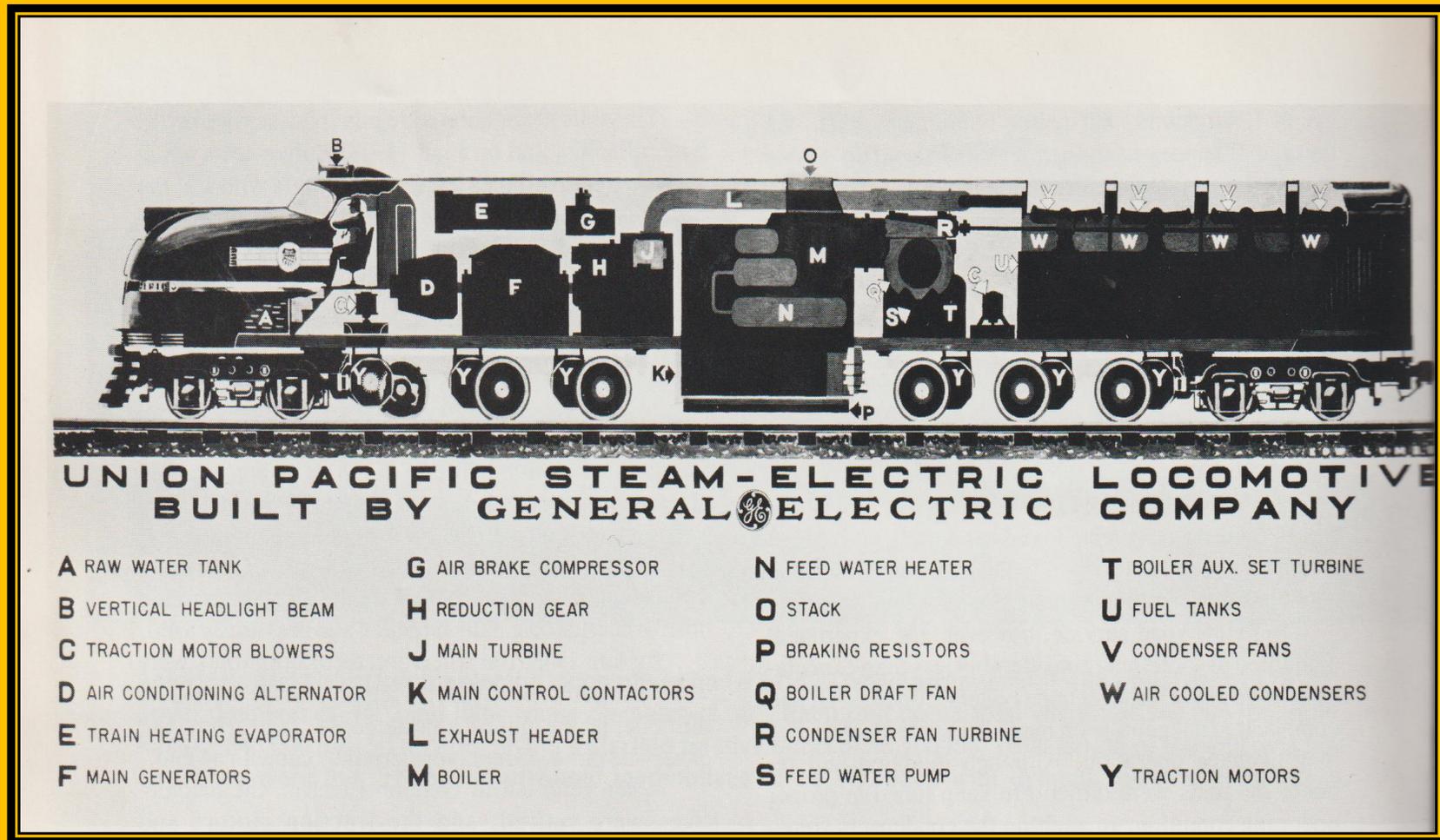
The project was proposed in 1936 and completed in December, 1938. Each unit was rated at 2,500 HP which was developed from an oil fired, water tube boiler. The steam at 1,500 psi, powered a turbine that was coupled to 2 direct current generators to power 6 traction motors in a 2+C-C+2 wheel arrangement on each unit.

The units were 90 feet, 10 inches long and utilised air cooled condensers for a closed boiler water system similar to the closed system used in steam ships.

This new complex technology used in railroad service led to serious reliability issues. The units were returned to GE on June 17, 1939 and in December 1941, the UP terminated their interest in this project.

The units did make several cross country trips. The units did find limited success on the GN in 1943. The GN eventually returned them to GE where they were scrapped. Turbines did not return to the UP until 1946!

# Interior arrangement of Turbine No.1



The first turbines on the UP, Nos. 1 and 2 were delivered to the UP by GE in April, 1939. They were actually steam-turbine/electric!



UP No.1 on the GE test track; Erie, PA.



Turbines 1 and 2 on a test train west of Omaha  
in April, 1939.



UP No.1 even tested on the New Haven...  
in HO Scale.



**Turbines 1 and 2, on April 29, 1939  
on Cecil B. DeMille's 15 car special, nationwide, 3  
week tour promoting his movie "UNION PACIFIC.**



# UP No. 1 in Washington Union Station in May, 1939.



Now, let's fast-forward  
to 1946.

GE, who was the builder of America's first jet aircraft engine proposed applying this technology to railroad use in 1946. GE, working with Alco outshopped a twin cab turbine-electric locomotive with a B+B-B+B wheel arrangement. The 83 foot, 7 inch unit developed 4,500 HP. It was released from GE's Erie plant in November, 1948. It was originally painted dark green with yellow stripes and lettered for Alco-GE. The engine tested on the NKP and PRR from November 1948 until June 1949. The UP accepted the turbine on June 28, 1949. It was renumbered 50 and painted in the UP colors. The engine was never owned or leased by the UP. The unit was tested on the SP in May and June, 1951. It was returned to GE and scrapped in 1953.

# GE turbine no. 50



Turbine 50 eastbound  
through Omaha in 1950.



Turbine 50 leaving No. Platte, NE, July 1950.  
Caboose on head end was for technicians.



- **The Standard Turbines,  
Road Numbers 51-60.**

The UP was very much encouraged by the performance of No.50. In March, 1951 the UP ordered 10, 4,500HP mechanically similar gas-turbine electric generators having a single end only.

Turbine 51 was placed in service  
on Jan.31, 1952.



UP began adding tenders in 1955. This tender is from 4-12-2 No.9038.



In 1953, UP added Farr stainless steel grilles to protect air cleaners.



MODERN MOTIVE POWER ASSURES EFFICIENT HANDLING OF FREIGHT SHIPMENTS VIA UNION PACIFIC

UNION PACIFIC RAILROAD COLORPHOTO

Even UP engines got dirty!



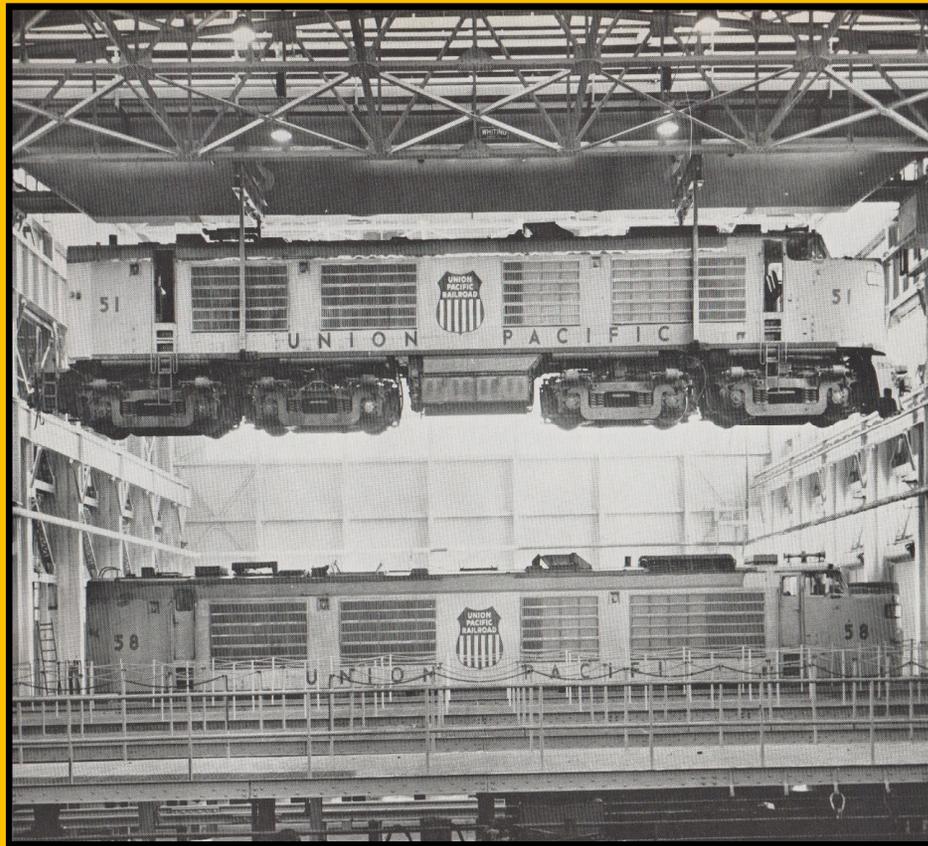
In 1956 the UP began replacing the Farr grilles with louvered air vents as seen behind the cab door.



In 1953 UP conducted a joint experiment with Richfield Oil to test a propane powered turbine. The experiment ended in January, 1954.



Turbine 51 gets “a lift” at the Salt Lake City shop. This was a test of the new 270 ton crane.



The Veranda's, Road Numbers 61-75.  
Between March and October 1954, the UP took  
delivery of an additional 15 4,500HP turbines.



In 1955, the Veranda's  
began receiving auxiliary tenders  
from scrapped 4-12-2's.



A battered and filthy No. 72  
in Council Bluffs, IA in 1962. Great  
“weathering job!”



A rarity was a turbine and steam.  
On September 4, 1955, turbine 61 and Big Boy  
4017 near Speer, WY.

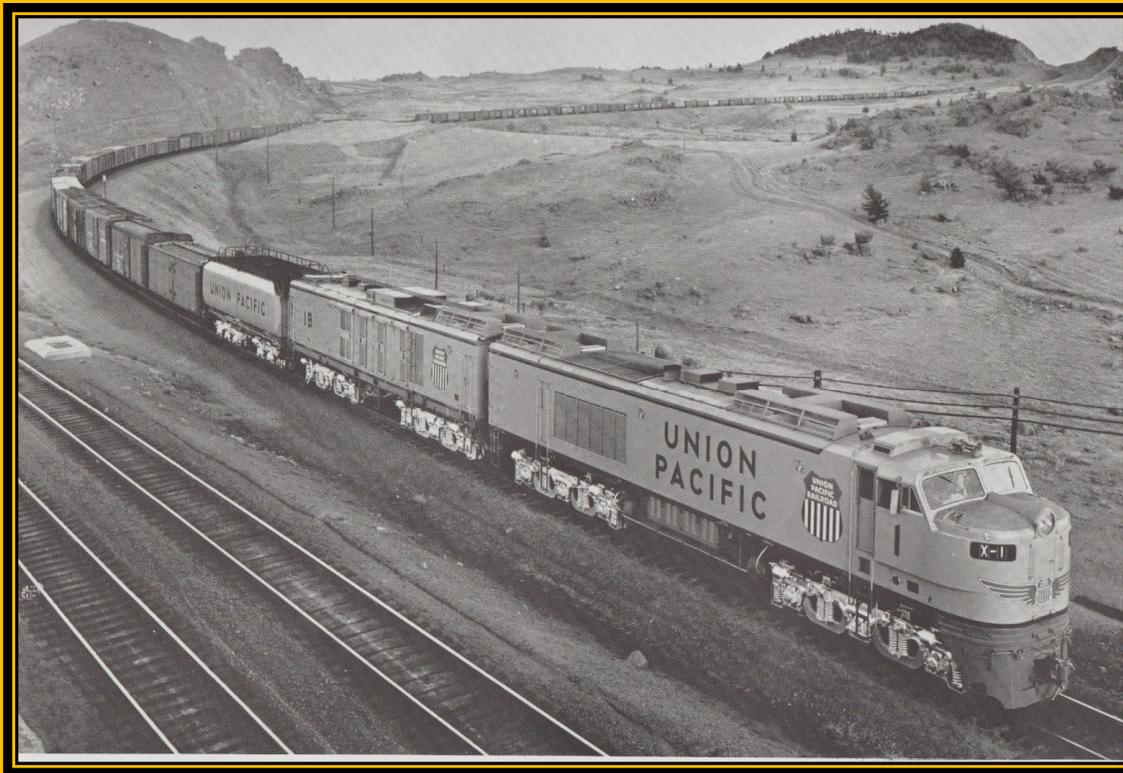


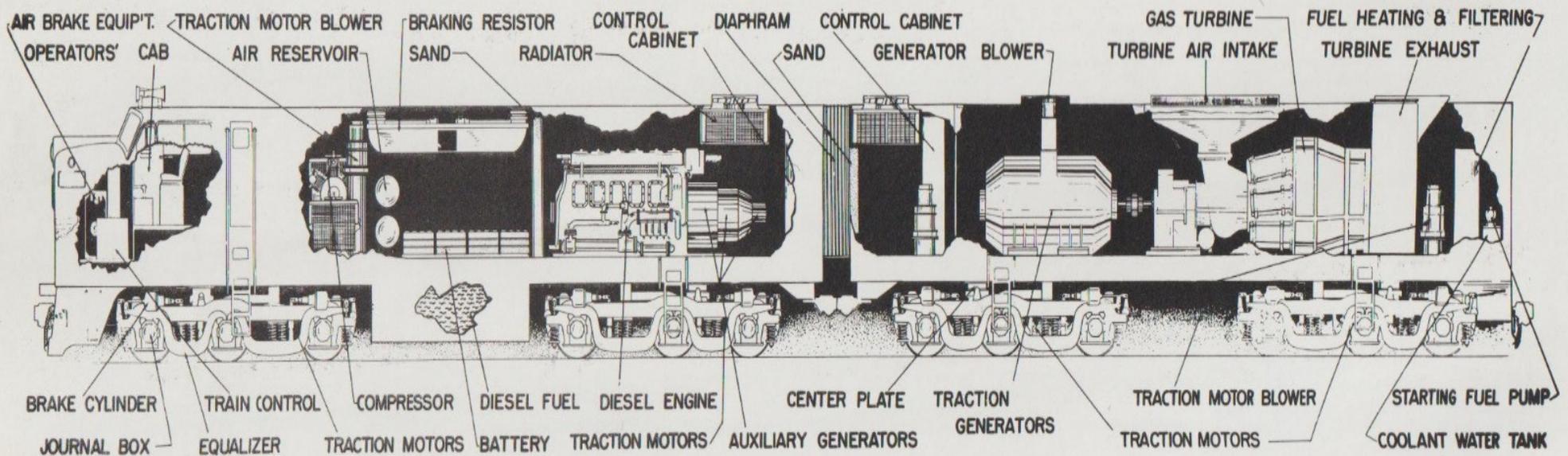
Turbine 73 mu'd with 2 Geeps.



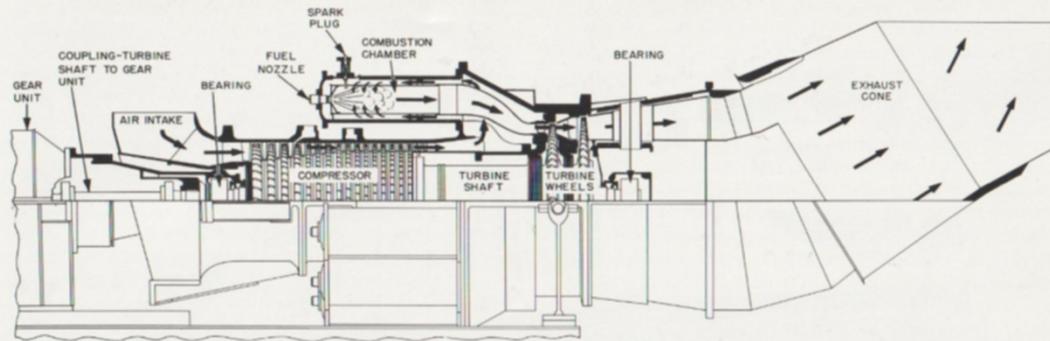
The 8,500 HP Super Turbines.  
Road numbers 1-30.

UP placed an order with GE in 1955 for 15 8,500HP turbines with an option for 30. The first unit was delivered in 1958. They would comprise 2 units with tenders from retired FEF-1's and Challengers. The order was completed in June, 1961.





**Cut-away of the 8500 horsepower Gas Turbine Electric Locomotive built by General Electric. The two units were coupled permanently, the front unit housing the accessory equipment and the back unit the main turbine powerplant and generators.**



Air flow diagram of the gas turbine engine in the 8500 horsepower turbine locomotive.



Apparently, the turbines were not noted for cleanliness. This unit failed in October, 1969 and was retired by the end of the month.



# UP GTEL No. 18 at the Illinois Ry Museum.



But wait. . .  
there's more!

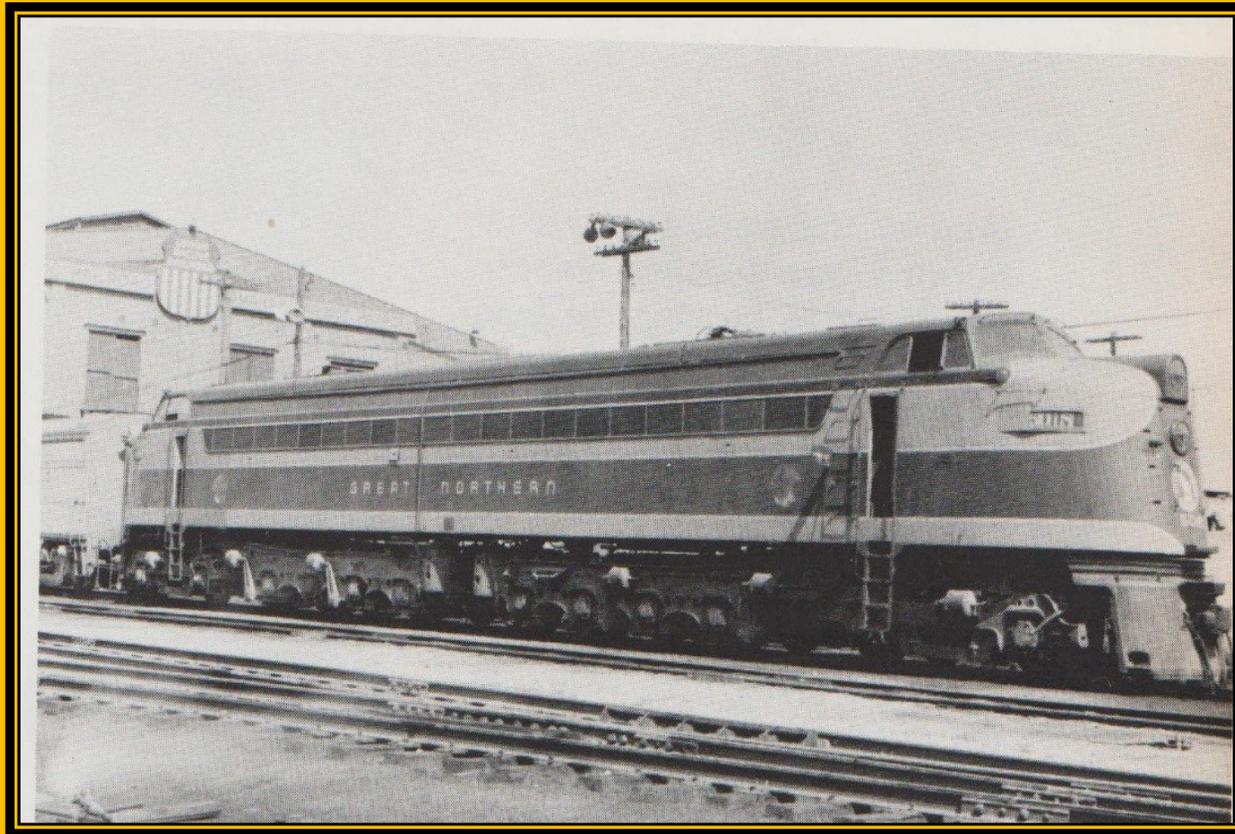
A Great Northern motor  
on the UP?????

# GN 5018 at the GE plant in Erie, PA.



GNR Photo courtesy  
Reinhard Krischer

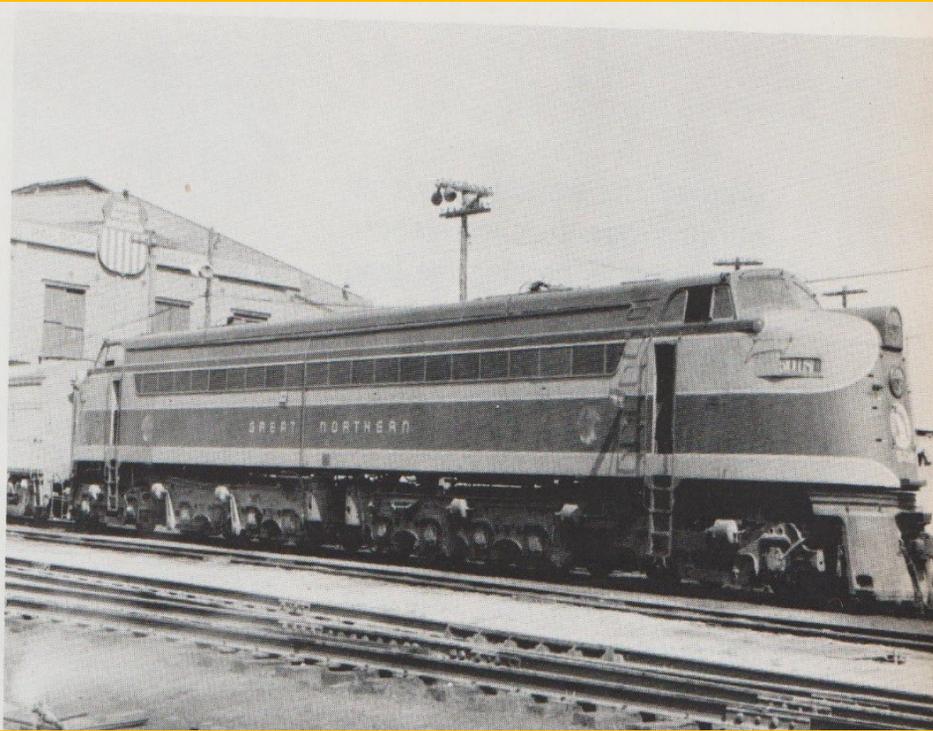
Was the UP planning on electrifying??????  
GN 5018 at Omaha in September, 1959.



Well. . .not quite!  
So, what's the story???

Since steam virtually gone on the UP, they wanted to keep their coal customers happy. So, UP decided to kit-bash a coal burning turbine!

From GN 5018 to UP 80B...  
Oh, the transformation!!



But wait. . .we're not done.  
Let's throw in a PA!



Due to a number conflict,  
PA 80 was renumbered 8080.



The whole thing turned out to be nightmare!  
Fly ash from the powered coal  
was chipping the turbine blades.  
The whole thing was retired in 1968.



The turbine era on the UP  
ended in February, 1970.

*Turbines on other railroads.*

The N&W's 1954 "Jawn Henry" 4,500 HP.



PRR's S2, 1945. Known as the "Big Swoosh."



C&O steam turbine, 6,000 HP 1948.



Westinghouse-Baldwin “Blue Goose”  
gas turbine. Built 1950, 4,000HP.  
It was scrapped in 1953.



So ends the “Turbine Story.”  
Thank you!