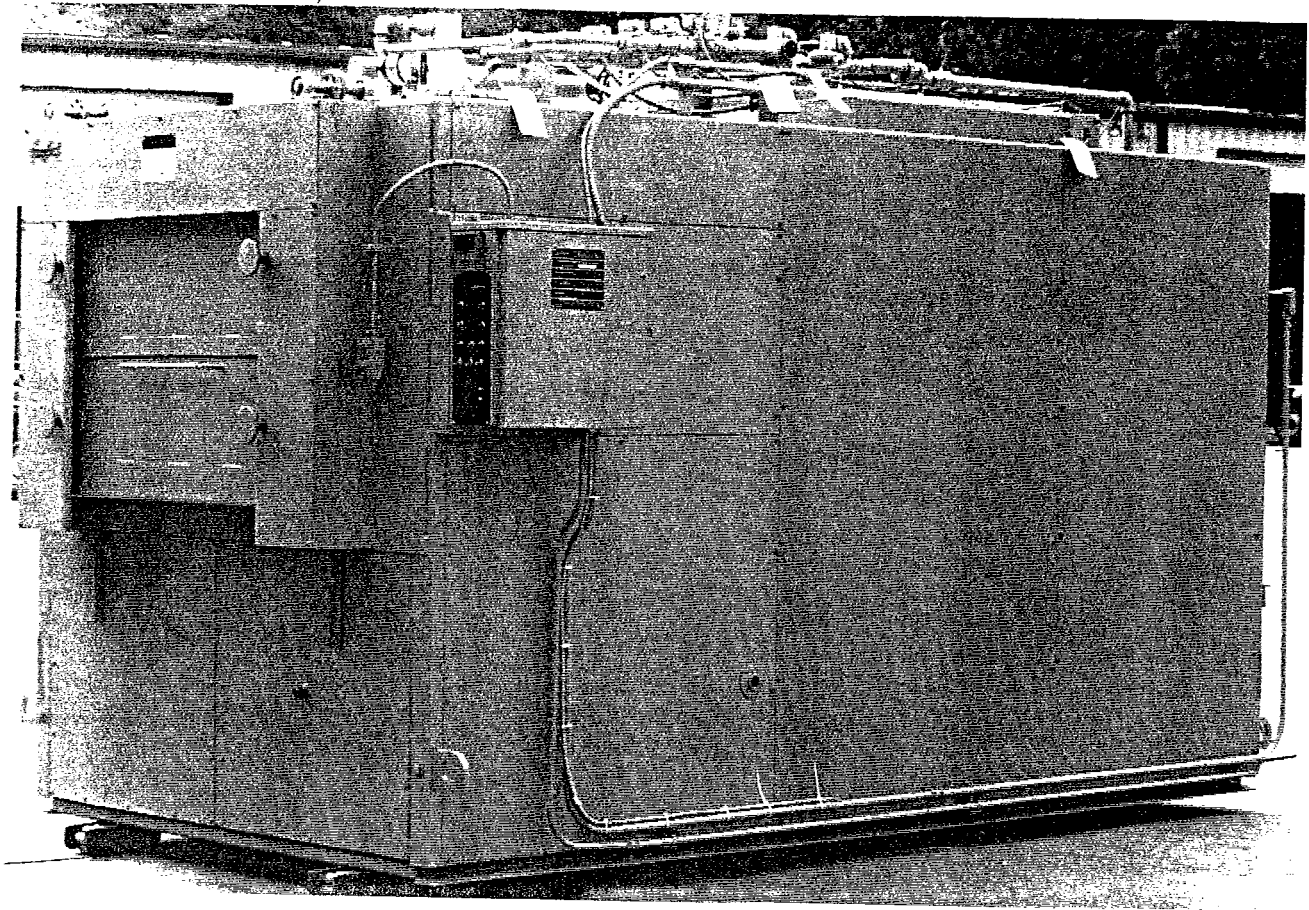


CRAWFORD MODEL C1000P



OVERVIEW: The Crawford Model C1000P is a 200 lb./hr. Multiple Chambered Pathological Cremation / Incineration System designed to process pathological as well as the high BTU content plastics found in "redbag" veterinary/medical waste streams, while complying with the higher temperatures and residence times being required by environmental agencies. Utilizing a unique negative pressured, controlled air, hot hearth design with 79 cu.ft. of primary chamber, the unit provides communal / mass cremation capacities of up to 1600 lbs. in a typical 8 hr. work day, with the capability of extended continuous operation to meet greater disposal demands, while still effectively providing for private cremation needs.

SYSTEM REQUIREMENTS:

FUEL: TYPE: N.G. or L.P.G.
PRESSURE: 7" - 11" W.C.
FLOW: 3 Million BTU/HR @ 2" Gas Header
Connection to be made at 2" Header and 1/2" pilot

ELECTRICAL: 1 - 10 hp, 208 - 230/460 V, 27 - 25/12.5 AMPS, 3Ø (1Ø Available)
1 - 115 V, 10AMP, 1Ø

MAKE-UP AIR: 2800 CFM

DIMENSIONS: 6'2" wide, 12'4" long, 6'9" tall

CLEARANCES: Sides 30", rear 36", Front as necessary to facilitate charging

STANDARD FEATURES: Relative 2 second secondary chamber residence time @ 1800° F
Loading cart
Eight feet of high temp. refractory lined stack (effect 14'9" rise from floor)
Programmable, digital secondary chamber temperature monitor/control
Operating tools

* * SPECIFICATIONS * *
C-1000P

I. EQUIPMENT:

Crawford Multiple Chambered Pathological Incinerator
Natural Gas, LPG or oil fired.

II. MANUFACTURER:

Crawford Equipment & Engineering Co.
436 West Landstreet Road
Orlando, Florida 32824

III. RECOGNIZED APPROVAL:

U.L. - UNDERWRITERS LABORATORIES, INC. (CONTROL #54E3)

IV. INCINERATOR CHAMBER DIMENSIONS:

Dimensions for C1000P: 6' 2" Wide, 12' 4" Long, 8' 7" High

V. OPERATING TEMPERATURE:

1,200 - 1,600 degrees Fahrenheit (primary chamber)
1,800 - 2,000 degrees Fahrenheit (after chamber) if required

VI. RETENTION TIME

2 second capability

VII. CAPACITY:

Firing Rate: 200 lb/hr (Type IV Waste)

VIII. CHAMBER VOLUMES:

The Crawford Incineration Chamber shall meet or exceed nationally accepted incinerator construction standards per the Incinerator Institute of America (IIA) publication guidelines; i.e. **Primary Chamber** will not exceed 60% of total chamber volume, **flue connection shall not be considered part of furnace volume.**

Primary 79 cu. ft.
Secondary 82 cu. ft.

IX. DRAFT:

Induced via patented 2600°F refractory lined draft inducer.

X. SHIPPING WEIGHT:

24,000 lbs.

XI. MONITORING:

Secondary chamber temperature is monitored and maintained at 1800° F minimum, via digital display, programmable control.

XII. EMISSION CONTROL:

Secondary chamber with two 1,000,000 BTU MAX. input and hot air duct opacity supervision by a Heat-Timer Corporation electronic exhaust gas scanner.

XIII. STEEL CONSTRUCTION SPECIFICATIONS:

- A. The incinerator structure to be heavy steel "I" beam, square tube and 3/8" plate steel welded construction.
- B. Subfloors to be 3/16" steel plate, seal welded construction.
- C. The exterior shell to be 12 gauge steel removable panels.
- D. The primary and secondary chambers shall have a 10 gauge Seal welded inner shell.

XIV. REFRACTORY SPECIFICATIONS:

- A. Hot Hearth Floor: 3,200°F. abrasion resistant fiber reinforced castable refractory, minimum 7" thick, monolithic, round arch.
- B. Secondary Chamber Floor: 3,000°F. abrasion resistant castable refractory, 7" thick.
- C. Chamber Ceilings: 3000°F. arch cast monolithic castable refractory, 7" thick.
- D. Chamber Walls: 2,800°F. alumina-silicate firebrick, 9" x 2 1/2" x 4 1/2" thick, backed by additional 2 1/2" 2600° F insulating brick.
- E. Stack: Lined with 2" of 2600°F castable refractory

All Chambers backed by 1" fiber insulation.

XV. SKIN TEMPERATURE CONTROL:

Completely air-cooled design to prevent excessive heat radiation.

XVI. COMBUSTION EQUIPMENT:

- A. Combustion Air: One three phase or single phase 230 volt, 10 blower motor (2800 CFM)
- B. Primary Chamber: One, down-fired, 1,000,000 BTU/HR MAX. (modulating) North American burner -- gas fire

- C. **Secondary Chamber:** One, 1,000,000 BTU/HR MAX(modulating) North American burner -- gas fired.
- D. **Ultraviolet Flame Safeguard:** Control supervision on each burner.
- E. **Preheated:** Combustion Air, (improved fuel economy)
- F. **Low-Draft Pressure Safety Switch:** Interlocked to all burners.

XVII. EXHAUST GAS TEMPERATURE REDUCTION:

Hot air duct operating temperature: 800 degrees F. nominal @ exit

XVIII. HOT AIR DUCT SPECIFICATIONS:

10 gauge steel high temperature refractory lined duct with integrated patented refractory lined draft inducer for continuous negative pressurization.

XIX. UTILITIES REQUIREMENTS:

A. GAS:

- 1. **Size:** 2" diameter gas line per unit
- 2. **Pressure:** a) Natural gas: 6" to 9" W.C.
b) Propane: 11" W.C.
- 3. **Flow Rate** 3 million BTU/hr.

B. ELECTRICAL:

- 1. One 208-230/460 volt 27-25/12.5 AMP three phase connection for a 10 h.p. motor. (single phase available)
- 2. One 115 volt, single phase 10 amp connection.
- 3. One 208-230/460 volt, 7.8-7.4/3.7 AMP three phase connection for 3 h.p. hydraulic pump set.

XX. INCINERATOR CHAMBER DOOR:

Std: Manual spit counter balanced with remote lever actuation
Optional: Hydraulic, up opening.

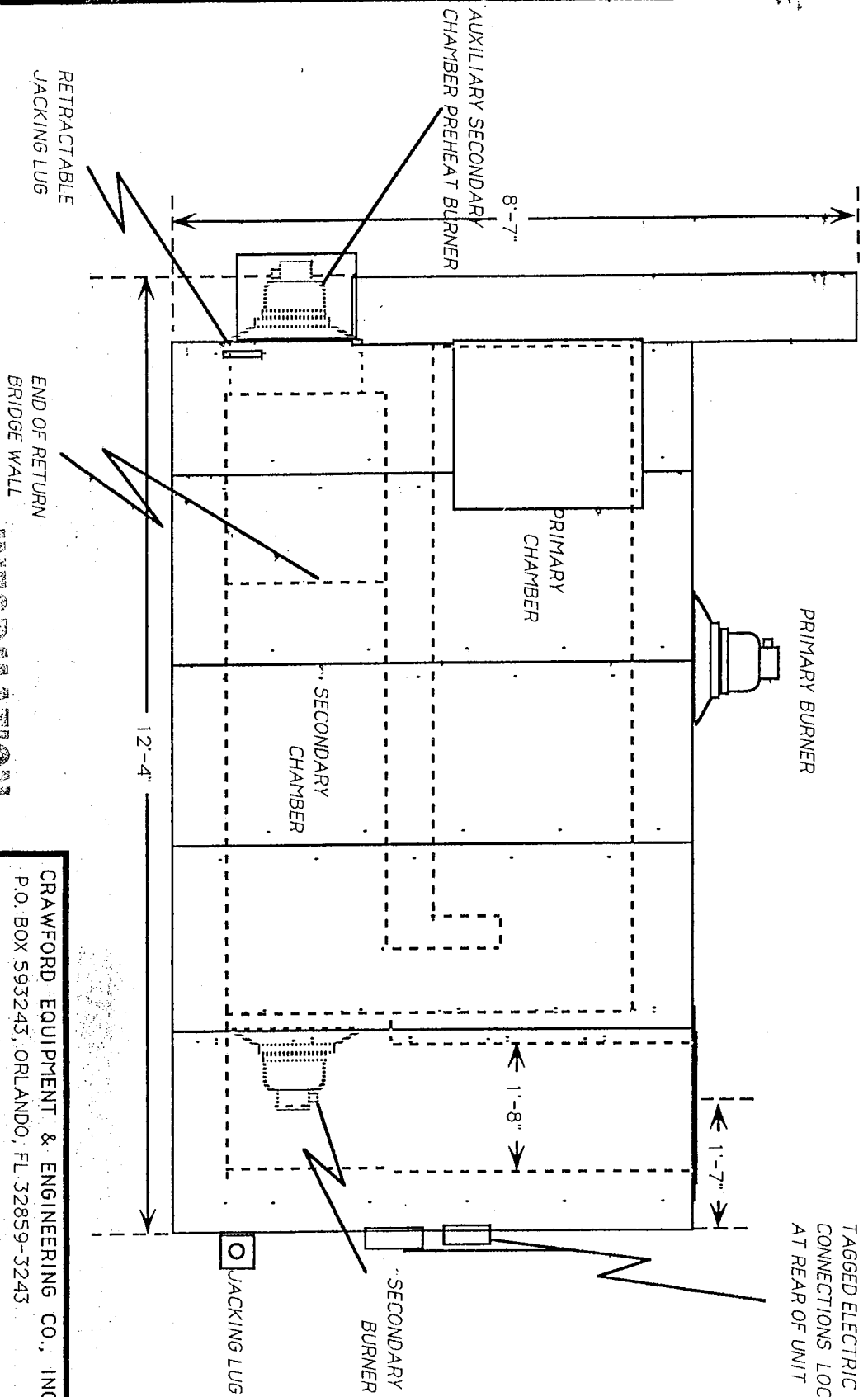
XXI. INCINERATOR PROCESS CONTROL:

Entire incinerator cycle controlled automatically via a timer control electronic relay system with manual override capability.
Visual conformation of system process status through control panel performance display readouts and digital temperature gauge.
Temperature activated fuel/air modulation automatically controlled.

XXII. EXTERIOR FINISH:

The incinerator chamber is finished with high-temperature silicone and textured polyurethane coating.

SIDE VIEW



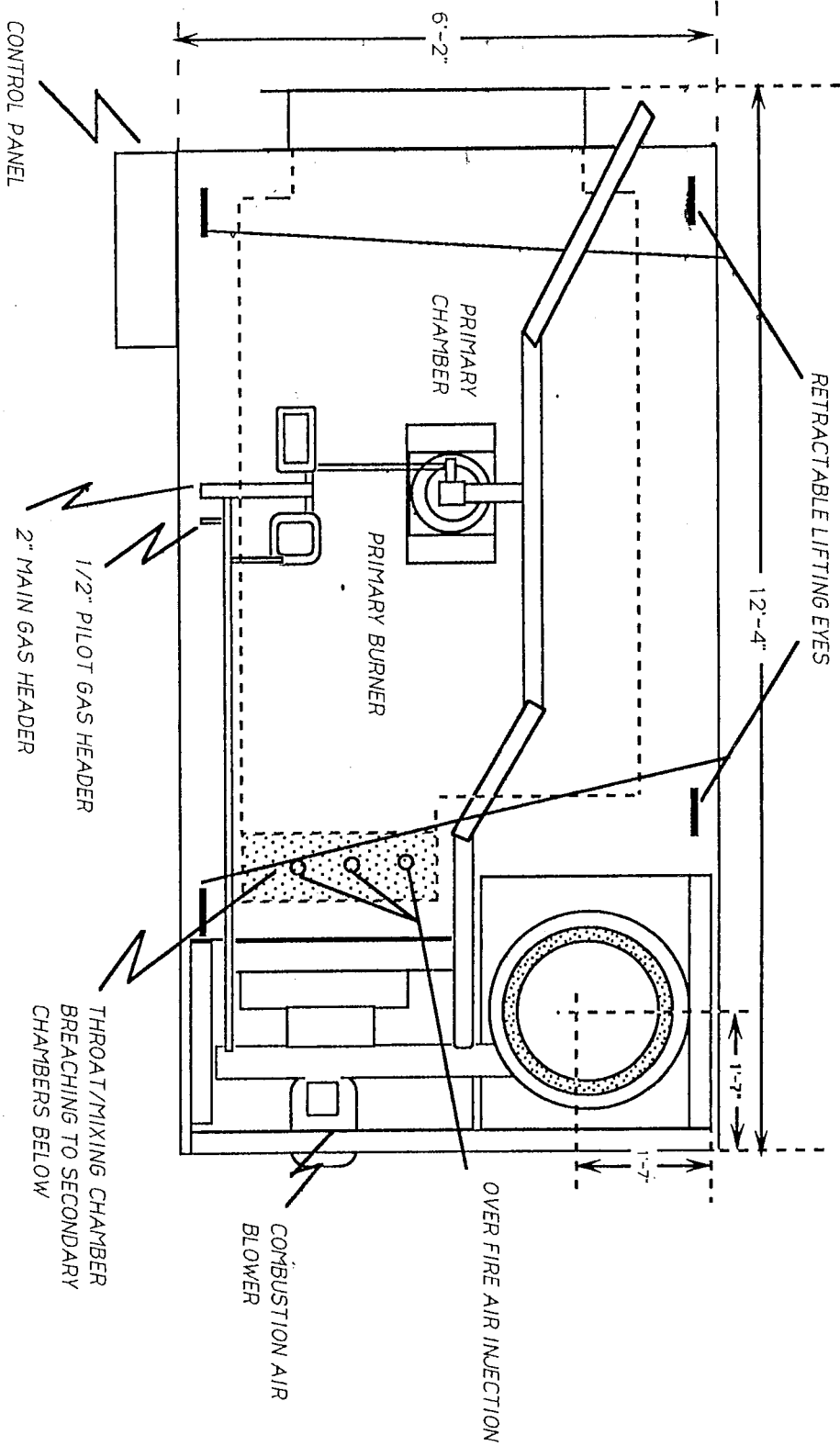
GRAV-FORD EQUIPMENT & ENGINEERING

REGISTRATION

CRAWFORD EQUIPMENT & ENGINEERING CO., INC.
P.O. BOX 593245, ORLANDO, FL 32859-3245
SCALE: 1/2" = 1'
MODEL C1000P W/HYD. DOOR
DWN. BY: MN

GRAV-FORD EQUIPMENT & ENGINEERING

TOP VIEW



PROPRIETARY

INFORMATION

CRAWFORD EQUIPMENT & ENGINEERING

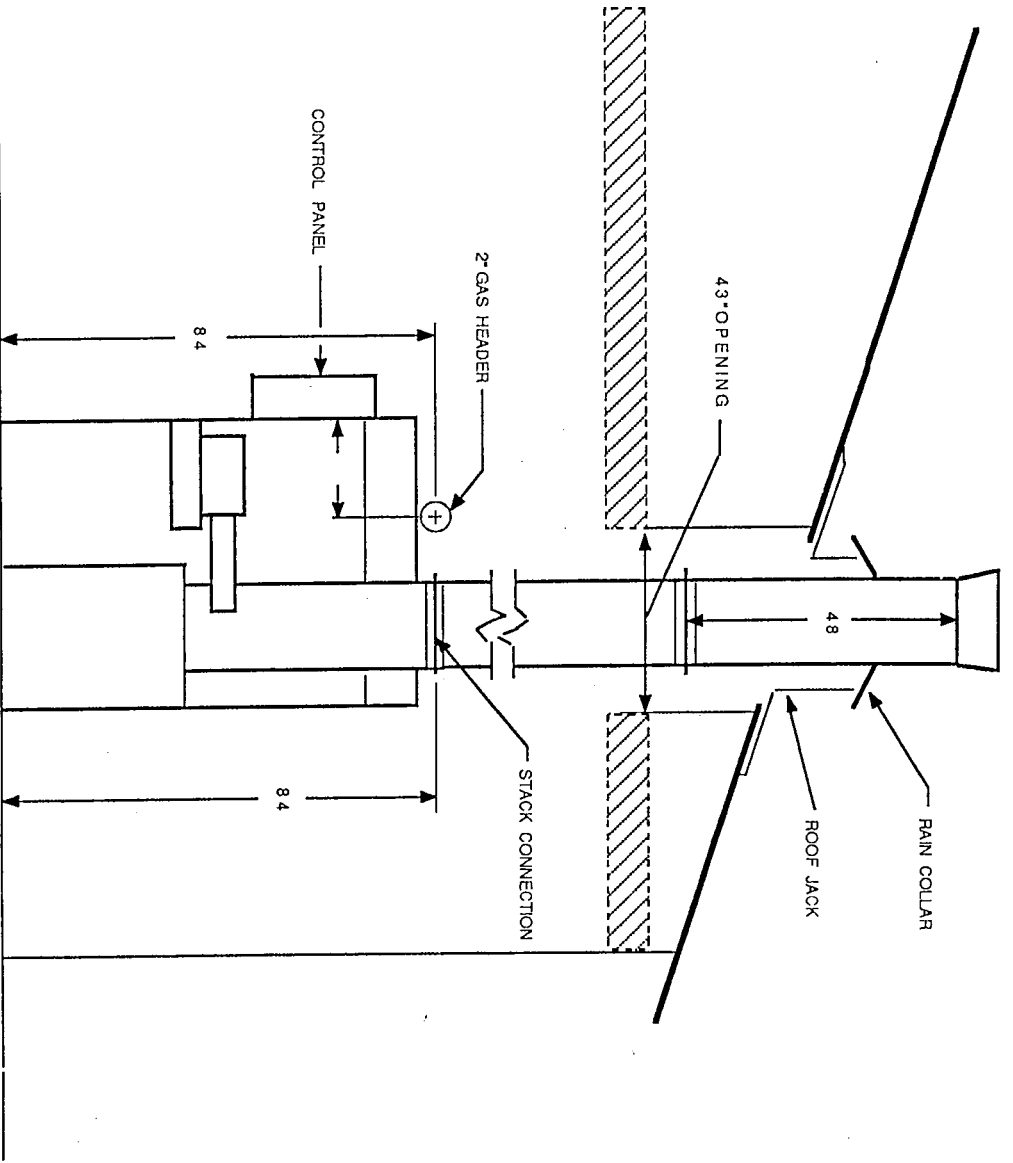
CRAWFORD EQUIPMENT & ENGINEERING CO., INC.

P.O. BOX 593243, ORLANDO, FL 32859-3243

SCALE: 1/2" = 1'

MODEL C1000P W/HYD. DOOR

DWN. BY: MN



- sides.....24"
- rear.....36"
- top.....18"
- stack.....8"

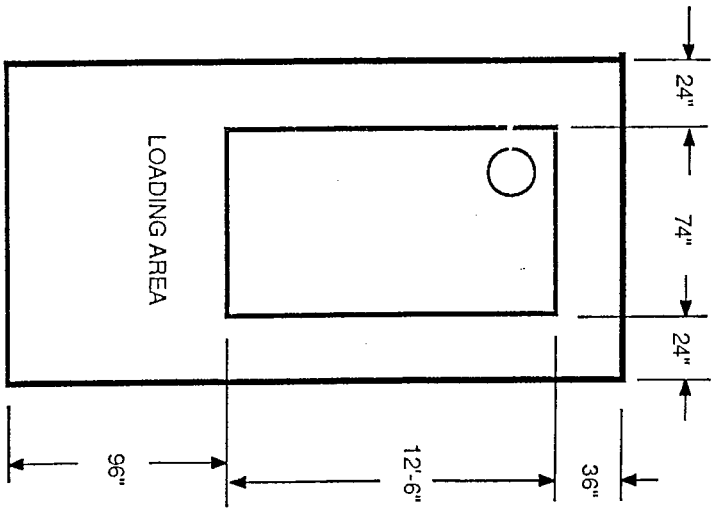
PROPRIETARY INFORMATION

NOTES : Per Underwriters Lab., Inc.; Minimum clearances to combustibles as follows:

floor - noncombustible - load bearing to support 24,000 lbs.

* CONSULT LOCAL BUILDING CODES AND ORDINANCES FOR ANY RESTRICTIONS WHICH MAY APPLY

MINIMAL FLOOR PLAN CLEARANCES



CRAWFORD EQUIPMENT AND ENGINEERING CO., INC.		
C-1000P	STACK	INSTALLATION
DATE: 5/88	BY: SDK	C - 5

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CRAWFORD EQUIPMENT & ENGINEERING

FEATURES & BENEFITS DETAIL

The following features are briefly summarized to provide you with an understanding and appreciation of how the Crawford incinerators work and why their design, materials and construction make them the best cremation/incinerator systems available in today's market.

**Use this detail when examining the illustrations within our brochure.*

If you should have any questions or comments about the following information please call me at 800-228-0884 or 407-851-0993.

Refractory lined Stack:

We roll 12 ga. steel into a cylinder and line it with 2 inches of 2600° F castable refractory to keep the heat within the stack and to protect the steel shell from thermal breakdown and corrosion. In fact all internal points of the entire incinerator are lined with a minimum of 4.5" of cast refractory insulation or insulating brick.

- safely accepts temperatures as high as 2600° F, this is critical because of state mandated operating temperatures of 1800° F or greater
- completely safe for indoor installation (U.L. listed)
- compatible with any standard recognized building materials (steel, wood, fiberglass, etc.)

Sealed Chambers:

We totally enclose the primary and secondary chambers with a 12 ga. steel shell and "seal" weld all the seams closed, so that no fluids or gases can escape.

- better structural integrity
- provides insulation barrier
- retains fluids and odors inside primary chamber until completely combusted

Hot Hearth:

The floor of the primary chamber and the roof of the secondary chamber are one continuous piece of castable refractory at least 7 1/2 inches thick.

- direct heat transfer from secondary chamber to primary chamber for better fuel efficiency
- hot floor gets fluids into a gaseous state very quickly so they can be combusted
- No buffer plate (steel) or air zone, that can expand or buckle which will prematurely break-down the primary chamber floor
- carcasses or wastes are thoroughly reduced to ash

Monolithic Arched Roof:

We take the time to cast a smooth, round arch roof in both the primary and secondary chambers.

- much greater structural integrity, when refractory cracks it will support itself, will not crumble a like flat roof tend to
- better air and gas flow within the chambers, no "passive" zones
- larger chamber volume or area

North American XS-Air Nozzle Mix Burners:

We do not use industry "packaged" burners. Our burners are manufactured by the industry leader (North American Co.) and have a distinct advantage in that they have no moving parts.

- offer greater flexibility in calibrating the air/gas mixture for optimum fuel efficiency
- low maintenance because they have no moving parts that wear or get clogged
- longer burner life - virtually replacement free

Removable Side Panels:

The exterior side panels are all hand fitted and threaded with machine screws so they can be easily removed and replaced should inspection or repair be required.

- faster and easier entry into the interior of the incinerator
- less expensive to work on, no torches or welding equipment needed to remove or replace side skins

Refractory-Lined Draft Inducer (Patented):

This device creates a draft (negative pressure) in the incinerator. By virtue of its *patented* refractory lining it is able to operate continually (24 hrs. per day if necessary) at extremely high temperatures (2600° F) while maintaining required retention times.

- saves time in that no cool-down period is required for the safe operation of this incinerator
- saves gas (ie money) in that you do not have to keep cooling machine down, then pre-heating it again to satisfy state environmental requirements....remember no cool-down is required with our equipment
- greater longevity for equipment life because there is less expansion and contraction going on. It is always better to operate an incinerator on a continuous basis rather than with starts and stops.

Center-Split Counter-Balanced Door:

Our charging door is split in its center, when opened the bottom half goes down and the top half goes up. The amount of physical exertion needed to open or close this type of door is very minimal. You also have to open the door only a small distance when inspecting or "working" the cremated remains inside the primary chamber.

- no periodic adjustments needed, door halves always stay in equal balance
- less heat is lost when opening door
- less exposure to operator
- no need to bend over to inspect cremated remains, door opens at a comfortable level for such inspection

Intrical Cremated Remains Hopper:

Allows for the convenient removal of cremated remains by simply raking the ashes into a funnel opening at the front of primary chamber. The ashes will fall through the funnel and be deposited into a container or standard urn for return to the client.

- Saves time when doing individual or private cremations

Independent Structural Framework:

We construct a free-standing superstructure using "I" beam, squares, channel and angle steel, all joints are seam-welded for strength, we then add insulating materials and other pertinent components to complete construction.

- extremely durable superstructure for longer operational life
- easily moved without danger of distortion
- even weight distribution facilitates easy installation

Opacity Sensor:

This device automatically monitors the opacity level within the stack and ensures the absence of visible emissions.

- In the case of operator error or unforeseen circumstances that may cause the incinerator to produce visible emissions, this device will temporarily lower the combustion rate in the primary chamber, allowing the secondary chamber to complete combustion of gases, thus eliminating any visible emissions.

Multiple Material Side-Wall Construction:

The inside walls of the incineration chambers are a combination of hard brick, high-temp insulating brick, insulating mineral block and thermal mineral blanket.

- hard brick provides prolonged operational life
- insulating brick retains temperatures within the chambers, saving you money in fuel costs.
- mineral block and blanket are an added insurance of heat retention

Multi-Point Combustion Air Injection:

The air injection system is constructed of seam-welded steel tubing and fittings, in conjunction with a modulated and controlled central air supply source. This system will provide a substantial amount of preheated combustion air for distribution to various points throughout the incinerator. The combustion air is preheated for greater fuel efficiency and refractory stability. This intricate distribution system is designed for greater flow dynamics allowing for variable amounts of air to be introduced at critical points to ensure complete combustion and enhanced levels of fuel efficiency.

- faster, cleaner and a more complete combustion takes place
- generates fuel savings as gas input is reduced, combustion air is combined with fuel content of materials being incinerated
- creates turbulence so gases can readily mix with air for rapid combustion

Chamber Door/Burner Interlocks:

This mechanism will automatically shut the primary burner off when the loading door is opened. This is a device that must be requested when placing order.

Safety:

Safety must be of primary concern to everyone involved in the operation and maintenance of an incinerator. All of the Crawford C500 and C1000 series incinerators are listed by Underwriters Laboratory for safety. The sole function of U.L. is to test for safety and they are the most widely recognized authority on the subject. It is important to emphasize that the entire incinerator(s) is U.L. listed and not just some of the component parts.

- compatible with any recognized building materials
- saves money on insurance premiums
- meets building and fire codes
- completely safe for indoor operation

Experience:

Over and above the physical attributes of our equipment, is the experience we have in manufacturing machines for this industry. Crawford machines have been servicing this market for over 18 years. The knowledge derived from that experience has led to numerous innovations over the years. It is important that you select a company that has the experience to help you through unexpected situations. We have that experience.

CRAWFORD C-100OP PATHOLOGICAL WASTE/INCINERATION CHAMBER

* Predicted Operational Cost Schedule:

Charging/Burning rate 200 lbs/hr
Assumed 8 charging hrs/day
Assumed 6 charging days/week
Assumed 52 charging weeks/year
8 charging hours with 2 burndown hrs/day = 10 total hours/day
(assume final charge of 600 lbs)
Systems capacity - 2,000 lbs/day
Systems capacity - 624,000 lbs/year

Predicted Fuel Cost:

Fuel source (Natural Gas or LP Gas) maximum 950,000 BTU/hr or 9.5 therms/hr. Assumed fuel cost = \$.60/therm
10 hours of maximum operation x 9.5 therms/hr = 95 therms/day
95 therms/day x \$.60/therm = \$57.00
\$57.00/day ÷ 2,000 lbs/day = \$.0285/lb

Predicted Power Cost:

10 Horsepower Motor
Assumed 50% duty cycle/hr or 117 kw/day
Assumed \$.10/kw or \$11.70/day
\$11.70 ÷ 2,000 lbs/day = \$.00585/lb

Annual Predicted Cost Summary:

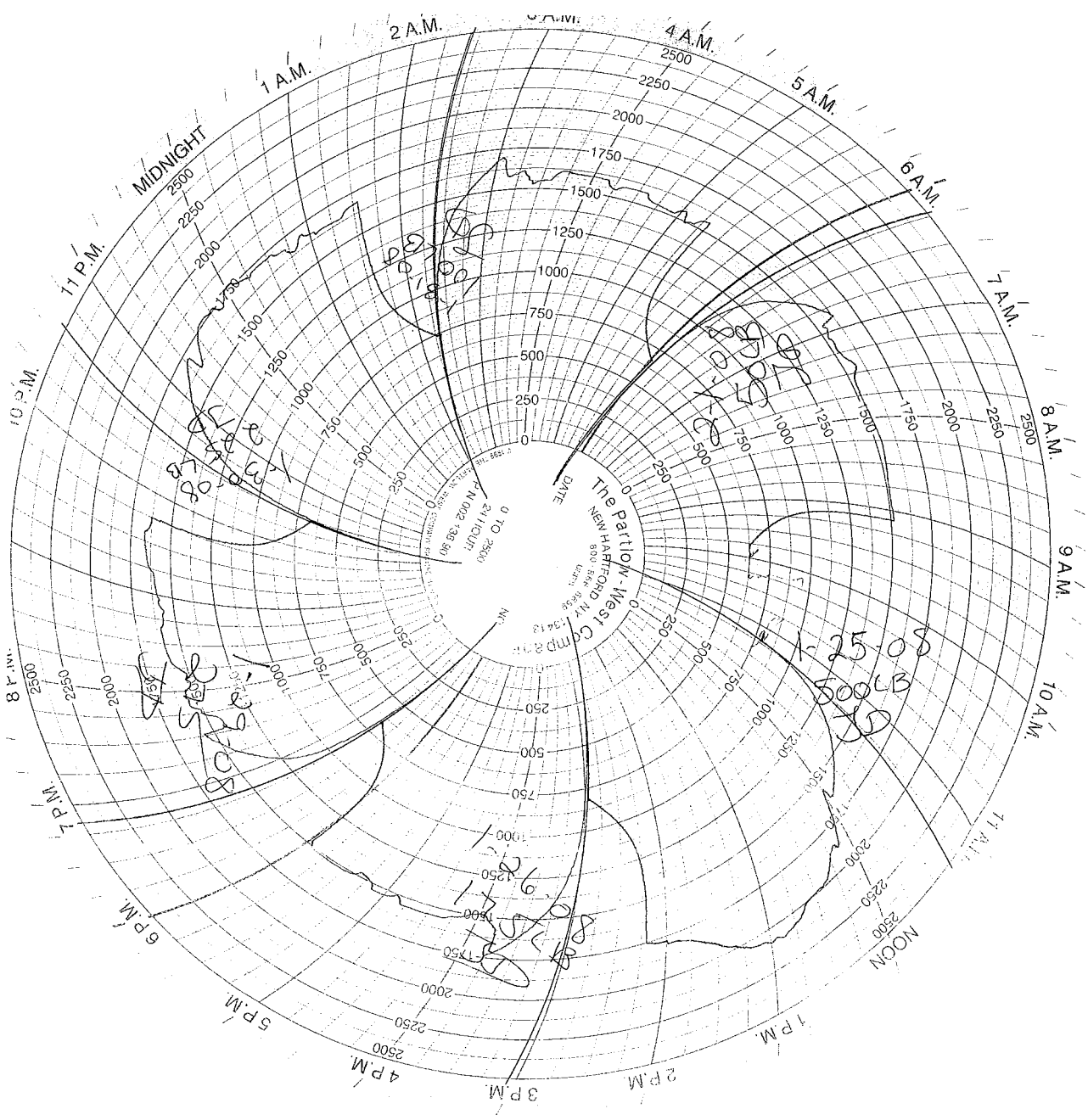
Natural Gas Cost (\$.60/therm)	= \$17,784.00
Power (\$.08/kw)	= \$3,650.40
Maintenance Allowance (5% of capital investment assume \$63,325.00)	= \$ 3,166.25
Total operational cost w/maintenance allowance	= <u>\$24,600.65</u>
Projected cost/lb at design capacity (624,000 lbs/year)	= \$ <u>.039</u>
Depreciated equipment life (recommended)	= 10 years

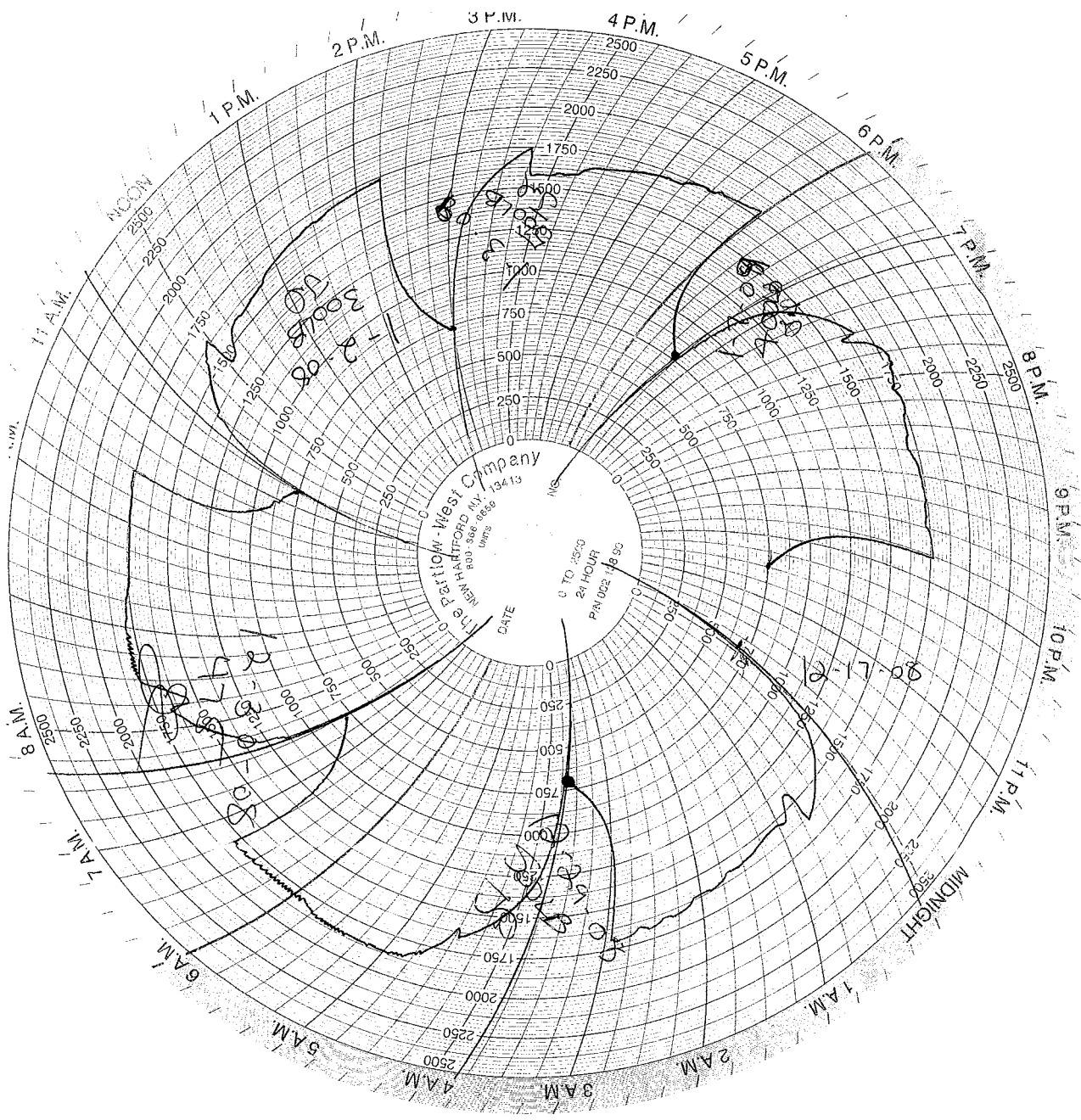
*Capital cost/depreciation/taxes not considered.

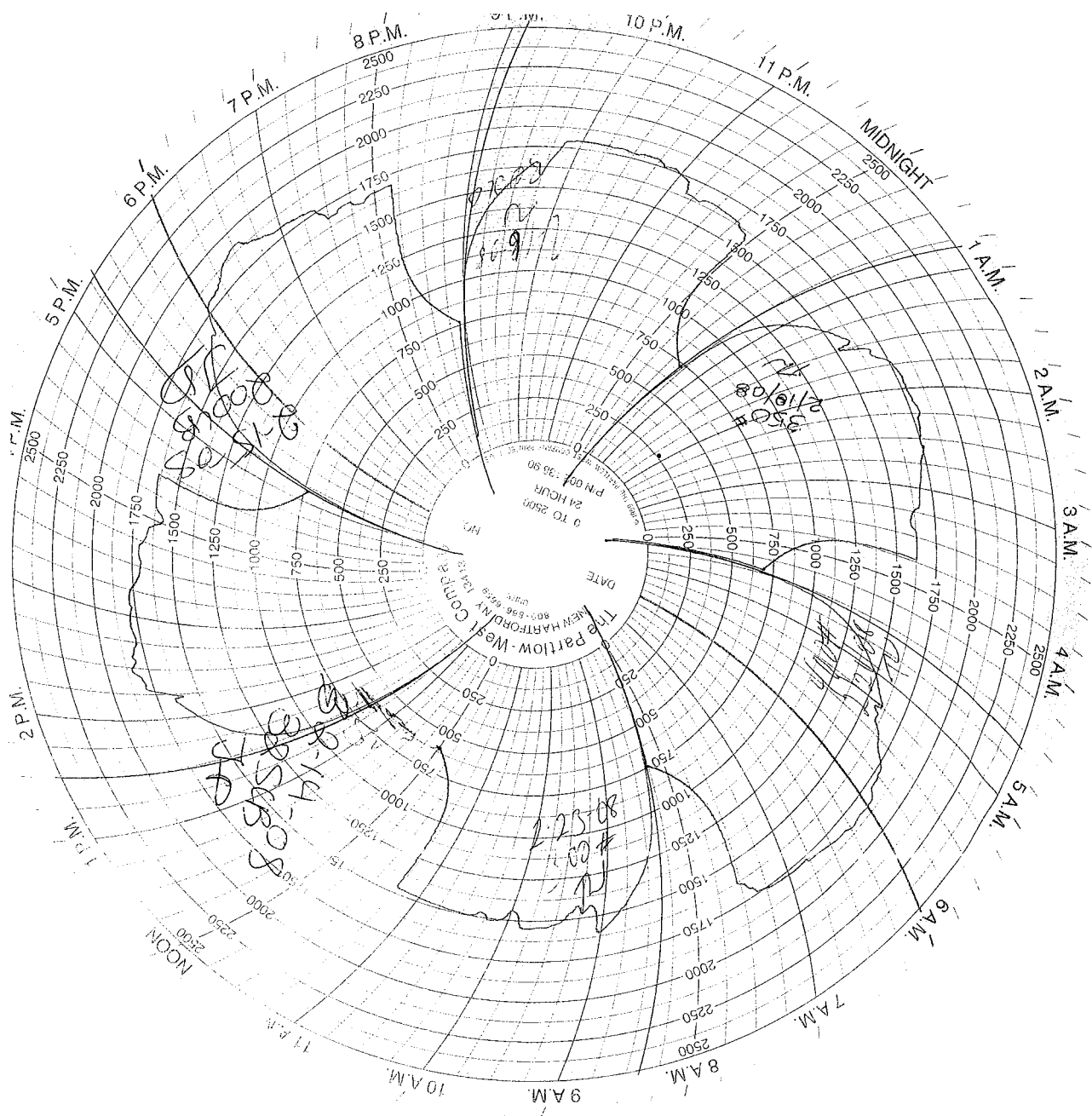
*** BASED ON ABOVE STATED CONDITIONS UTILIZING TYPE 4
WASTE
1000 BTU/LB HEAT RELEASE**

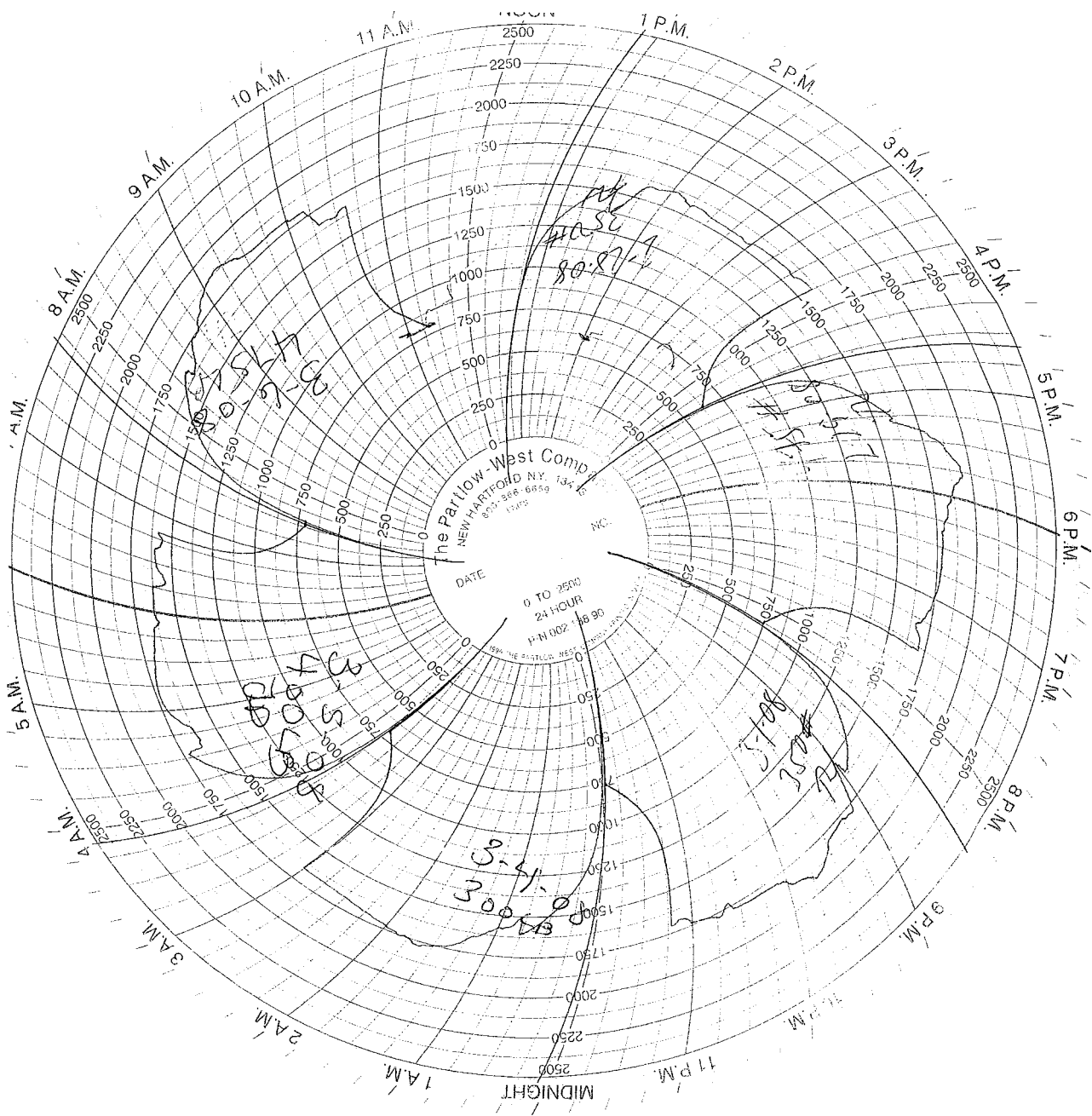
**PLEASE CONSULT WASTE CLASSIFICATION/INCINERATION GUIDE
FOR
ANTICIPATED PRODUCTION RATES FOR TYPE 0-3 WASTE**

**CRAWFORD EQUIPMENT & ENGINEERING CO.
436 WEST LANDSTREET ROAD
ORLANDO, FLORIDA 32824**









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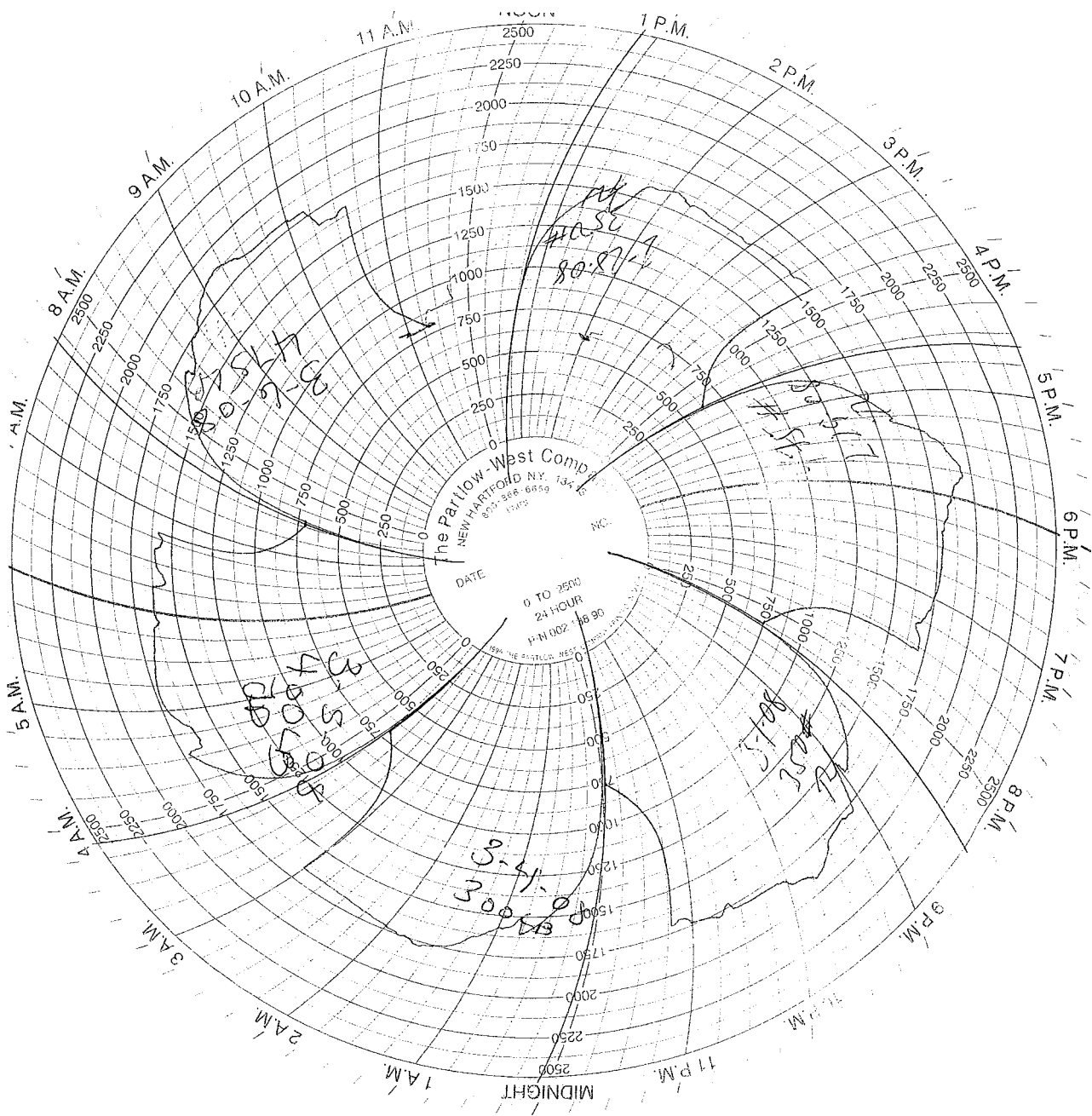
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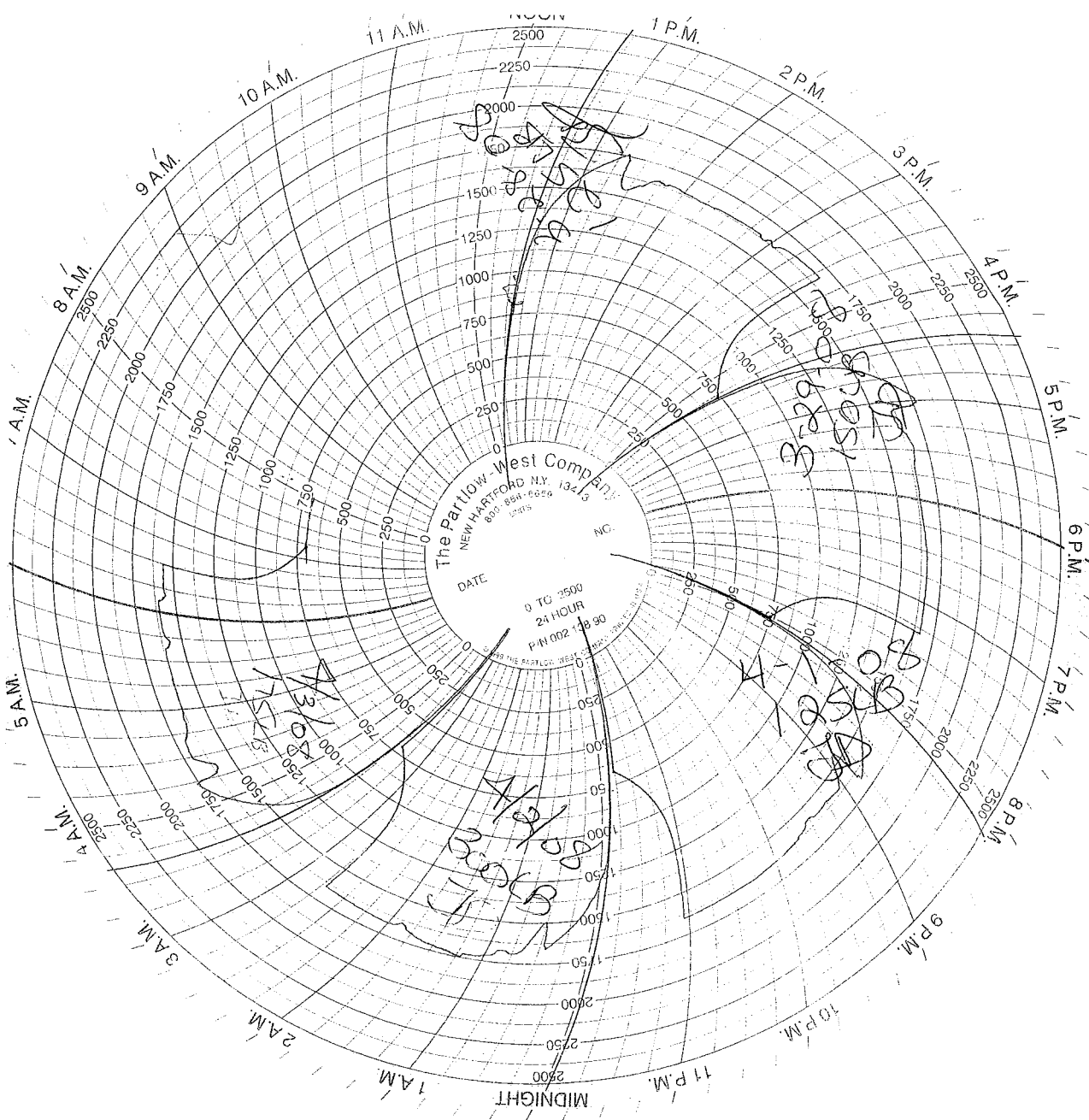
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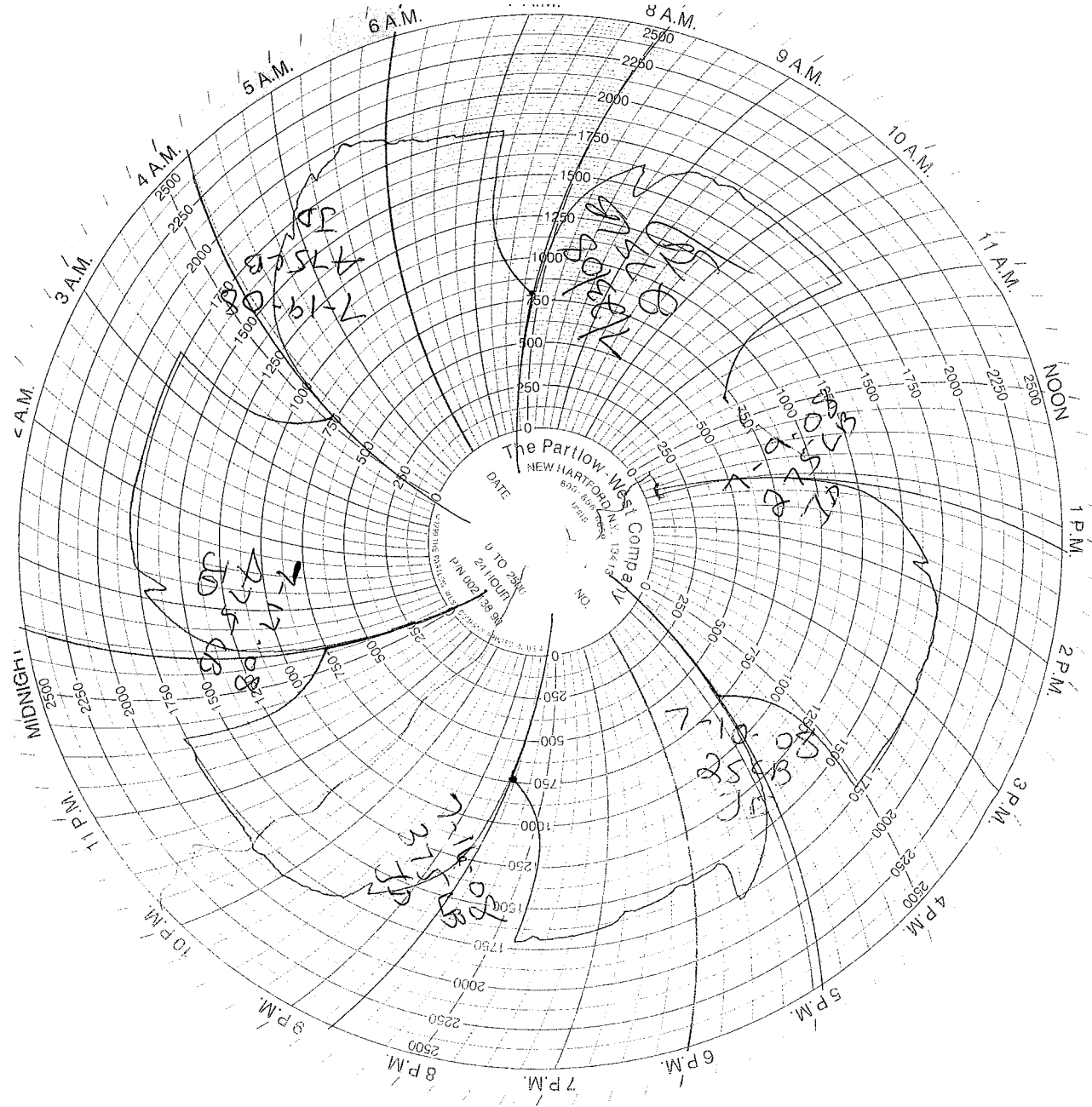




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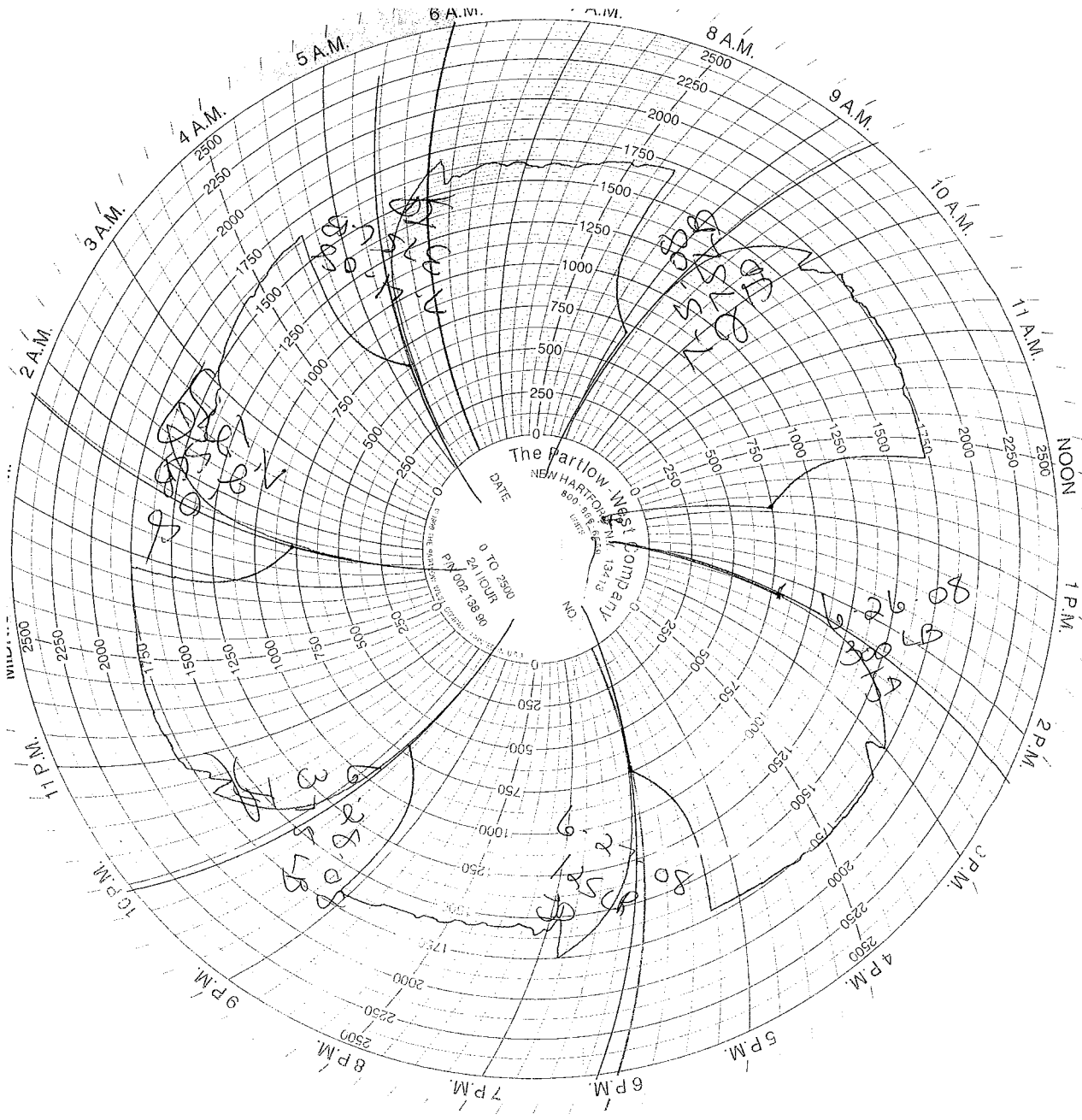
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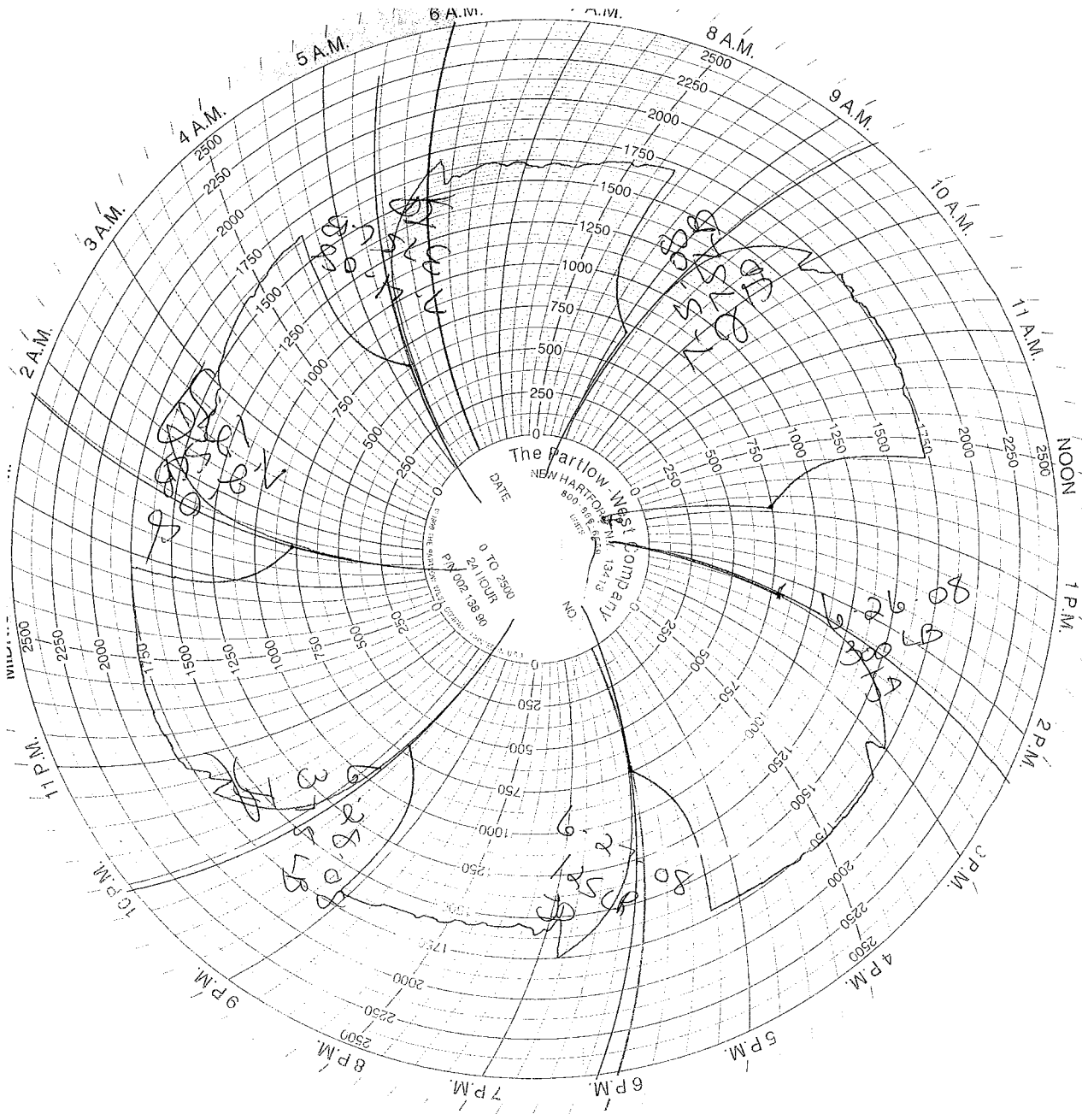
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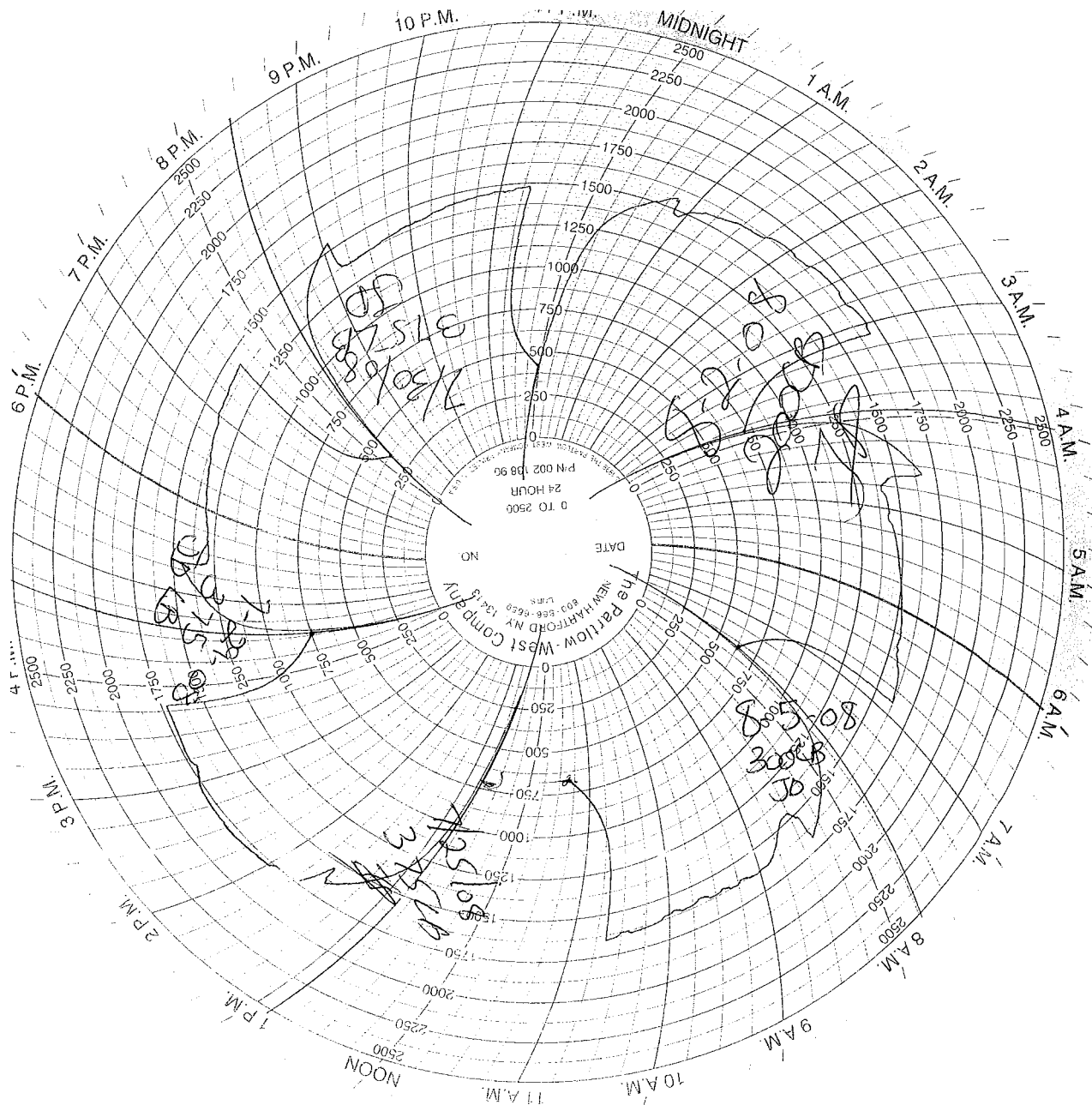
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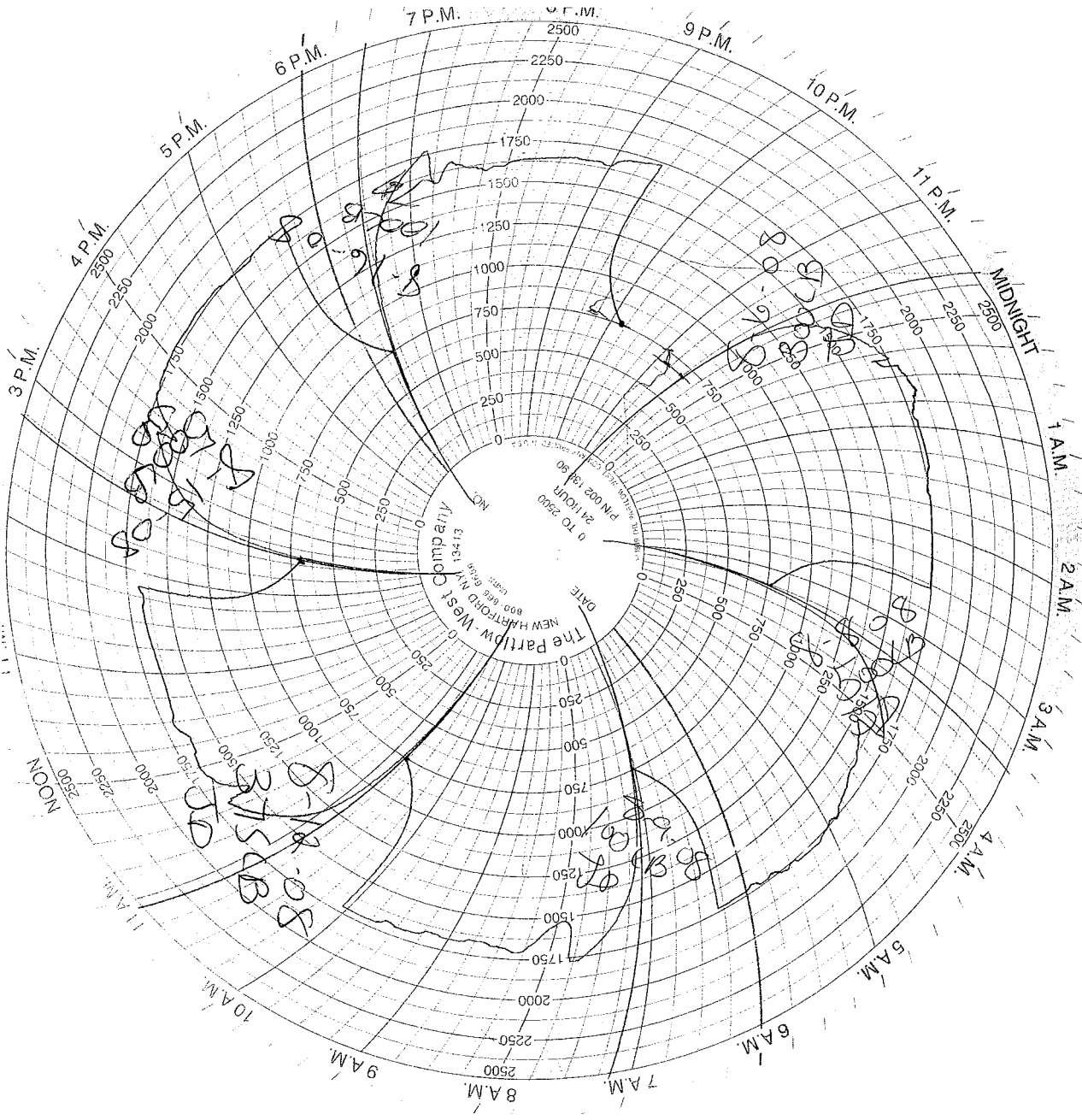


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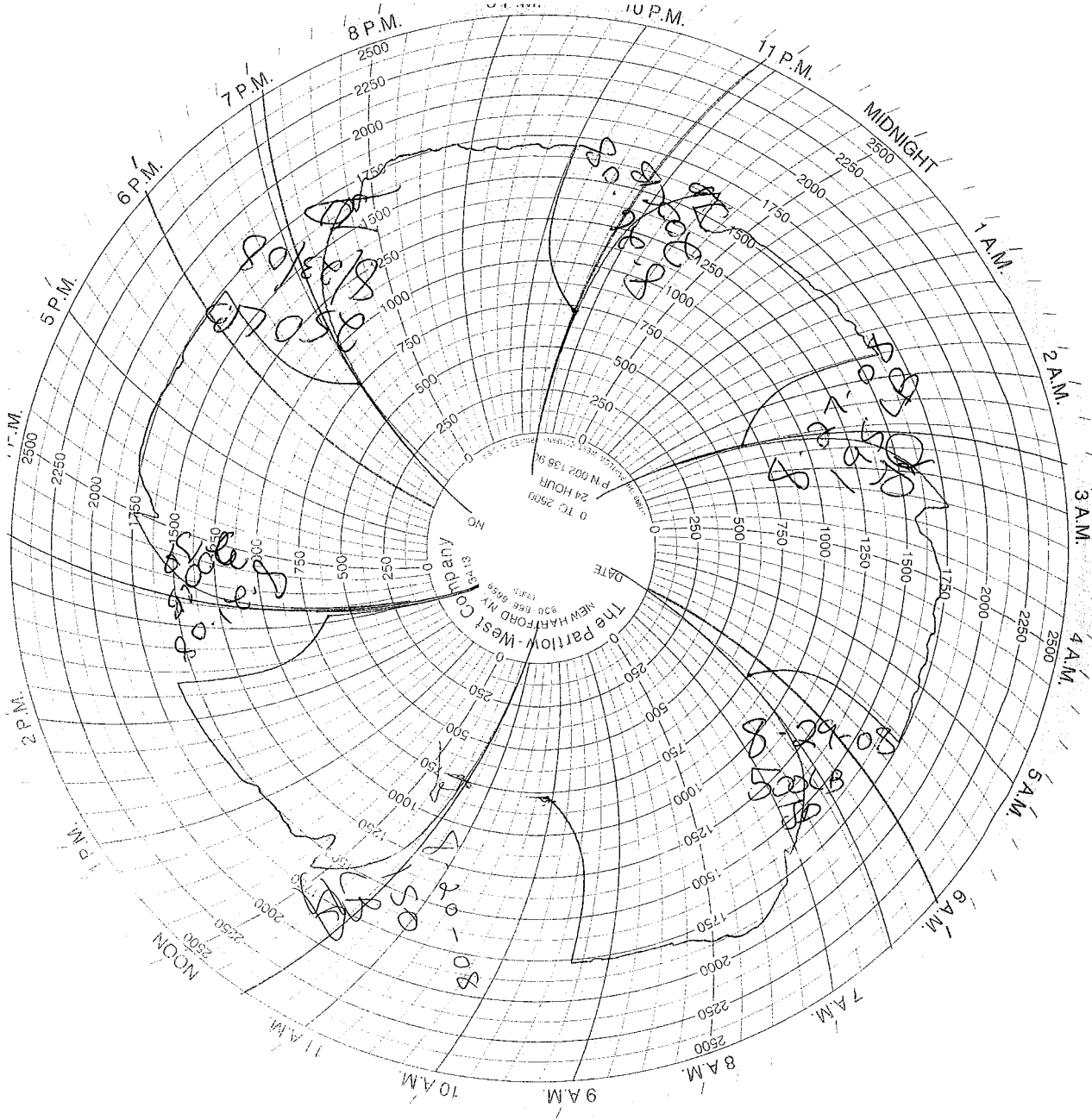
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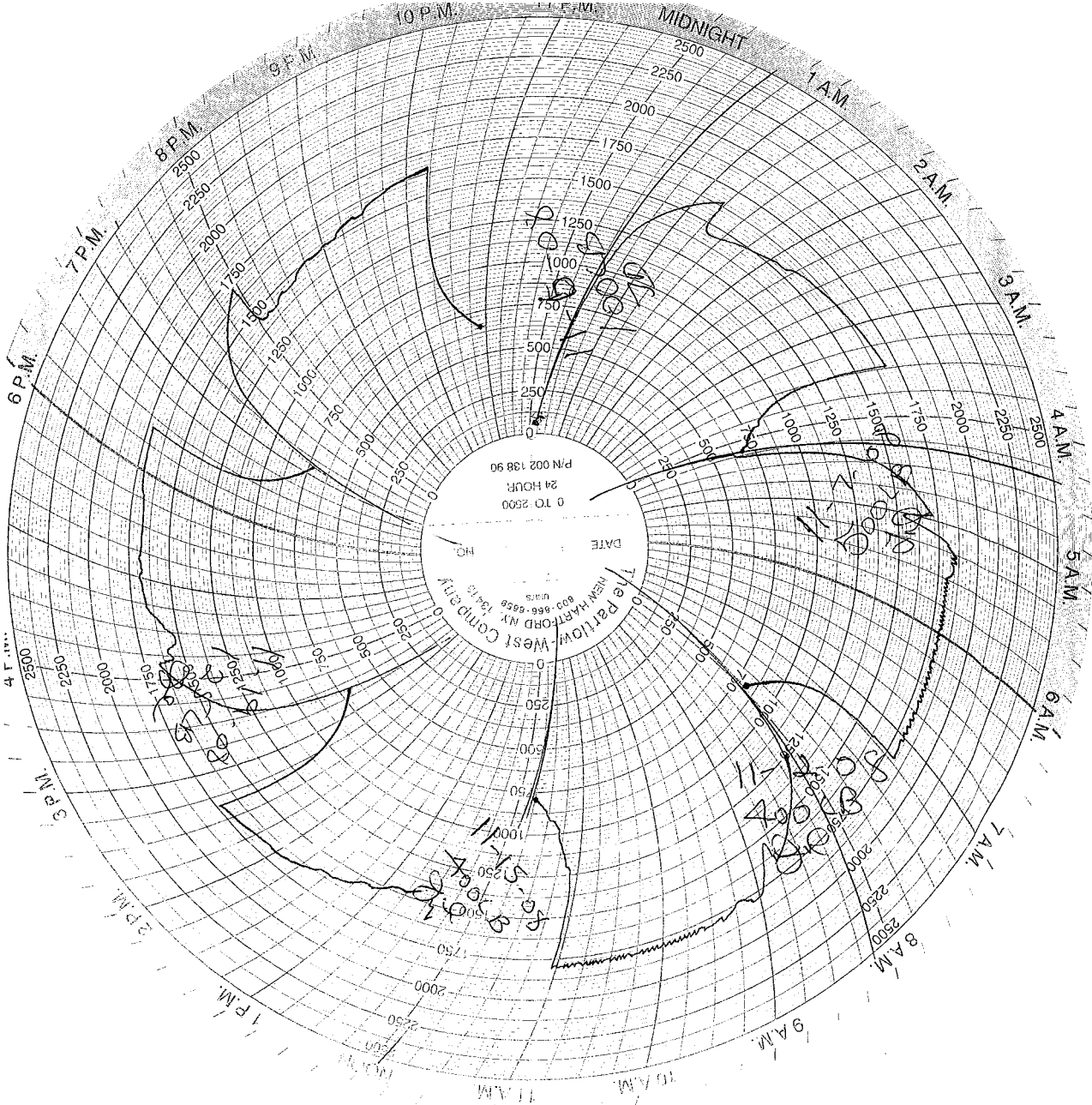
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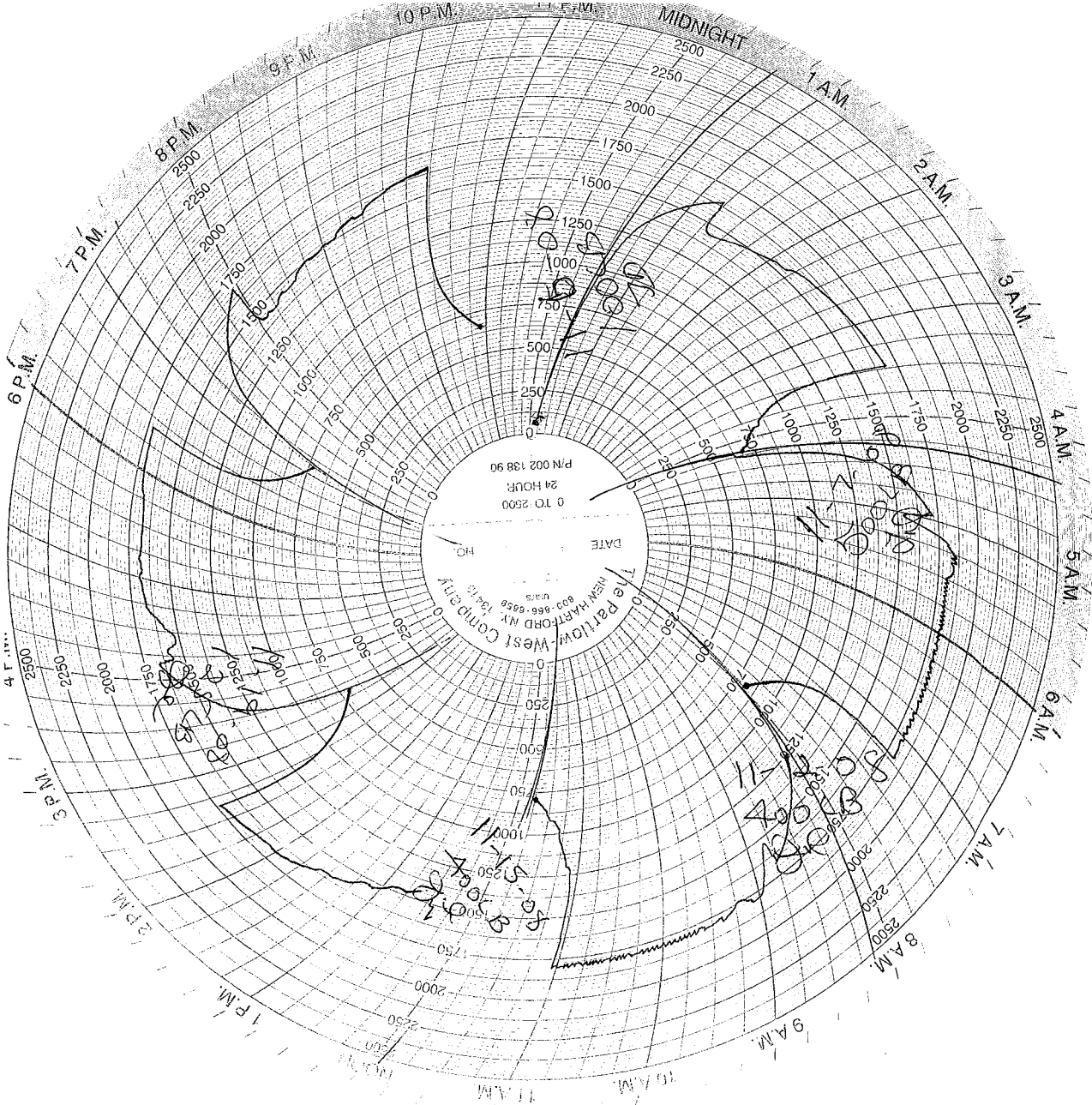
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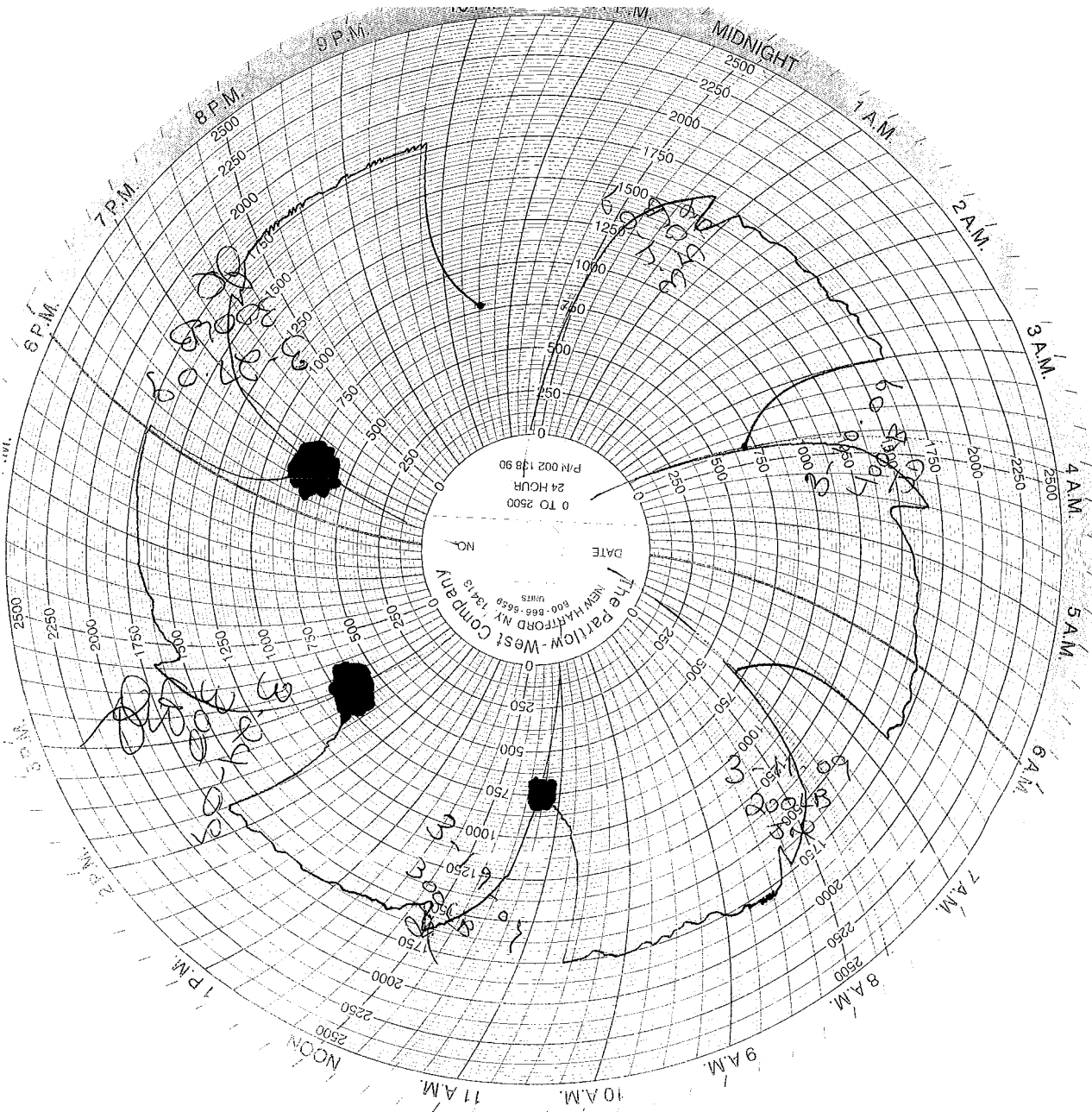
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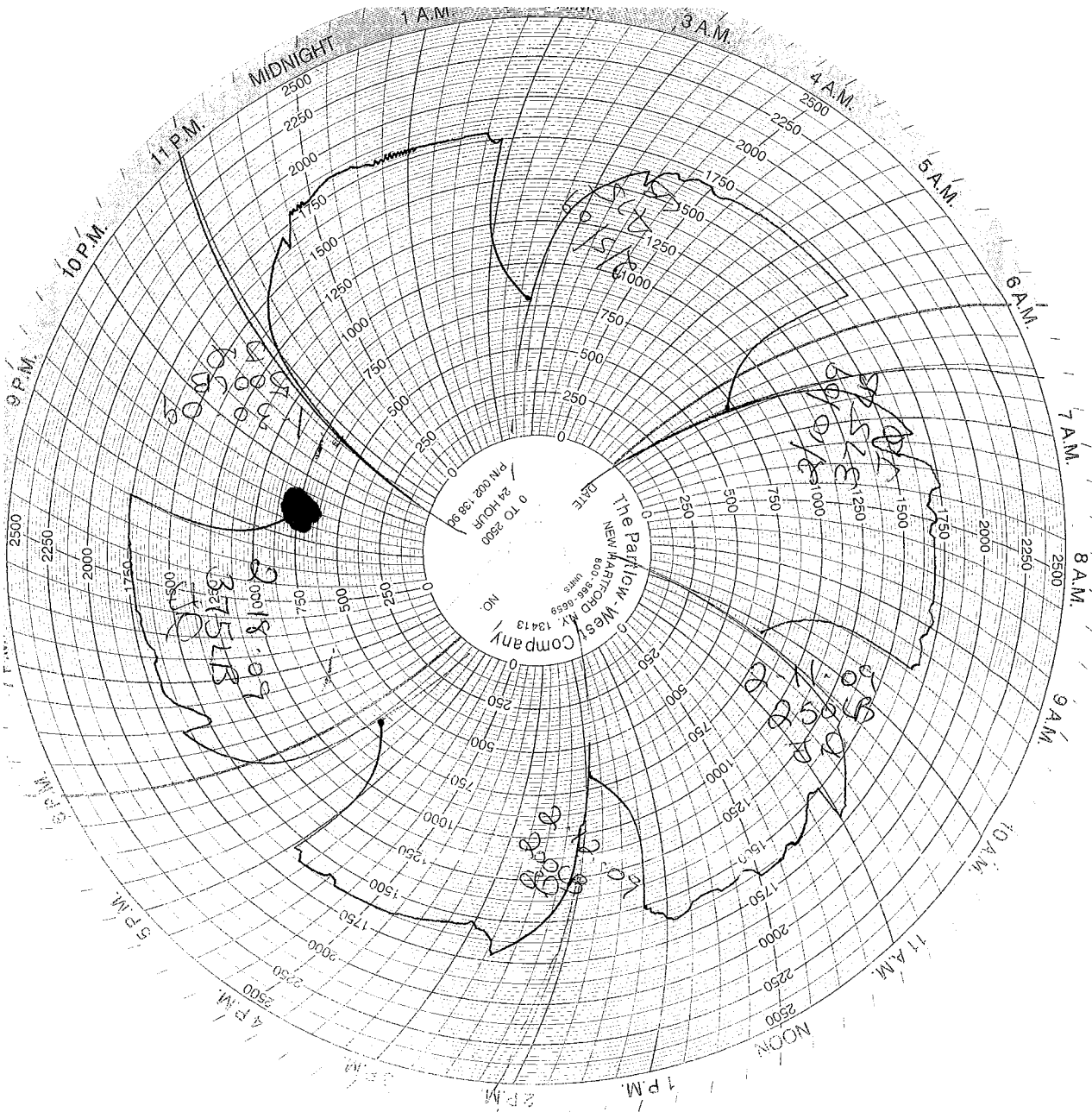
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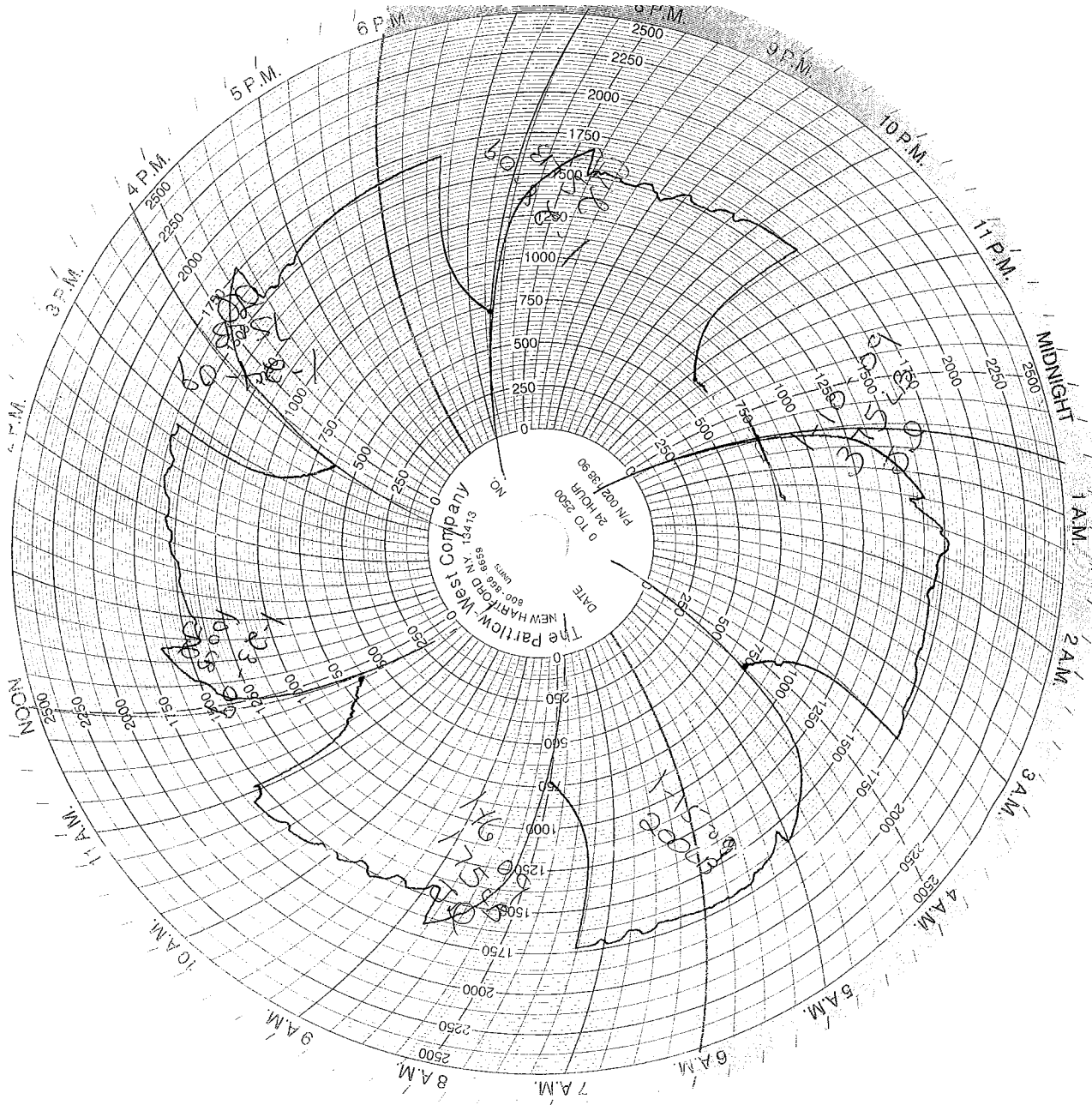


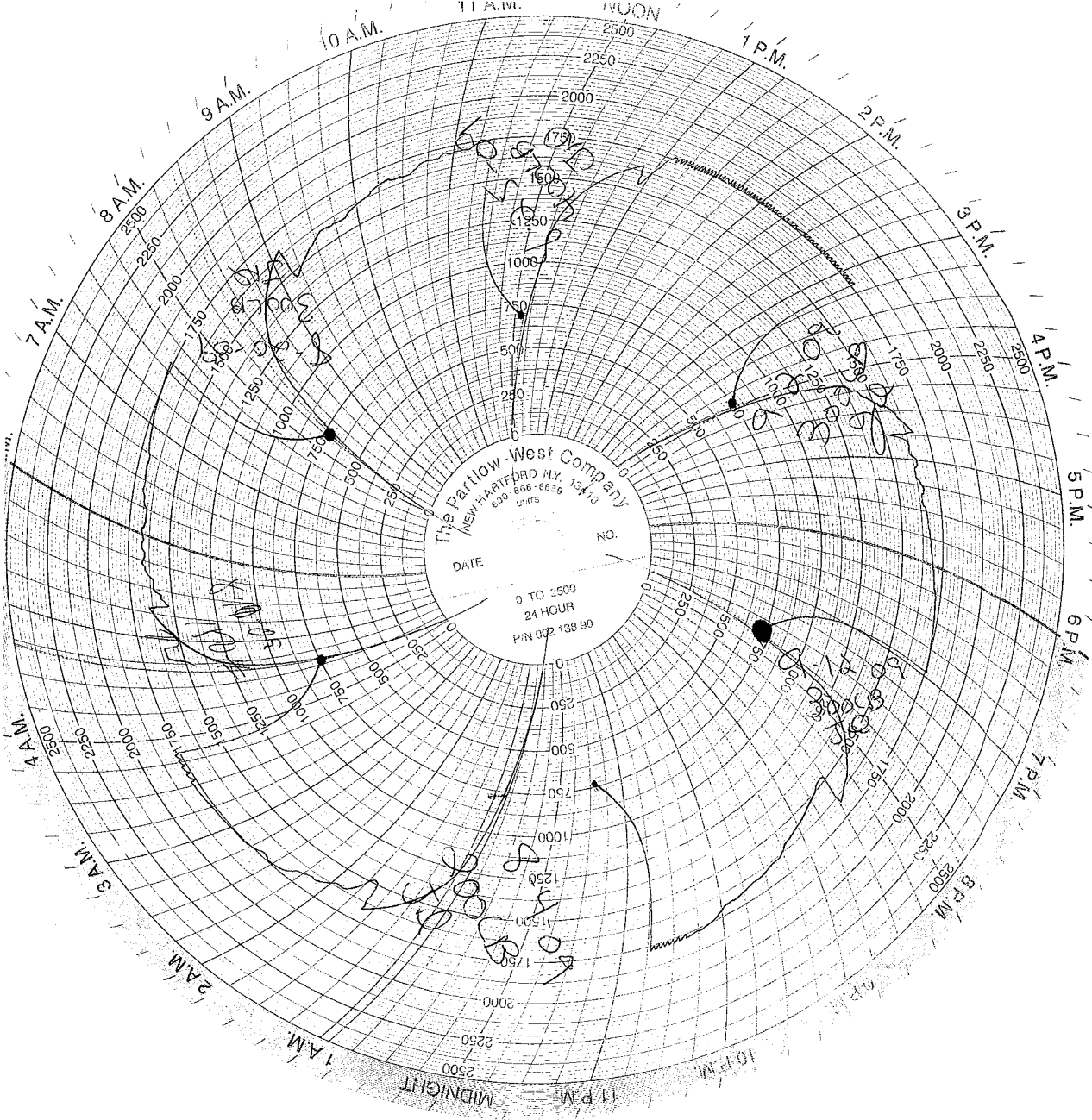
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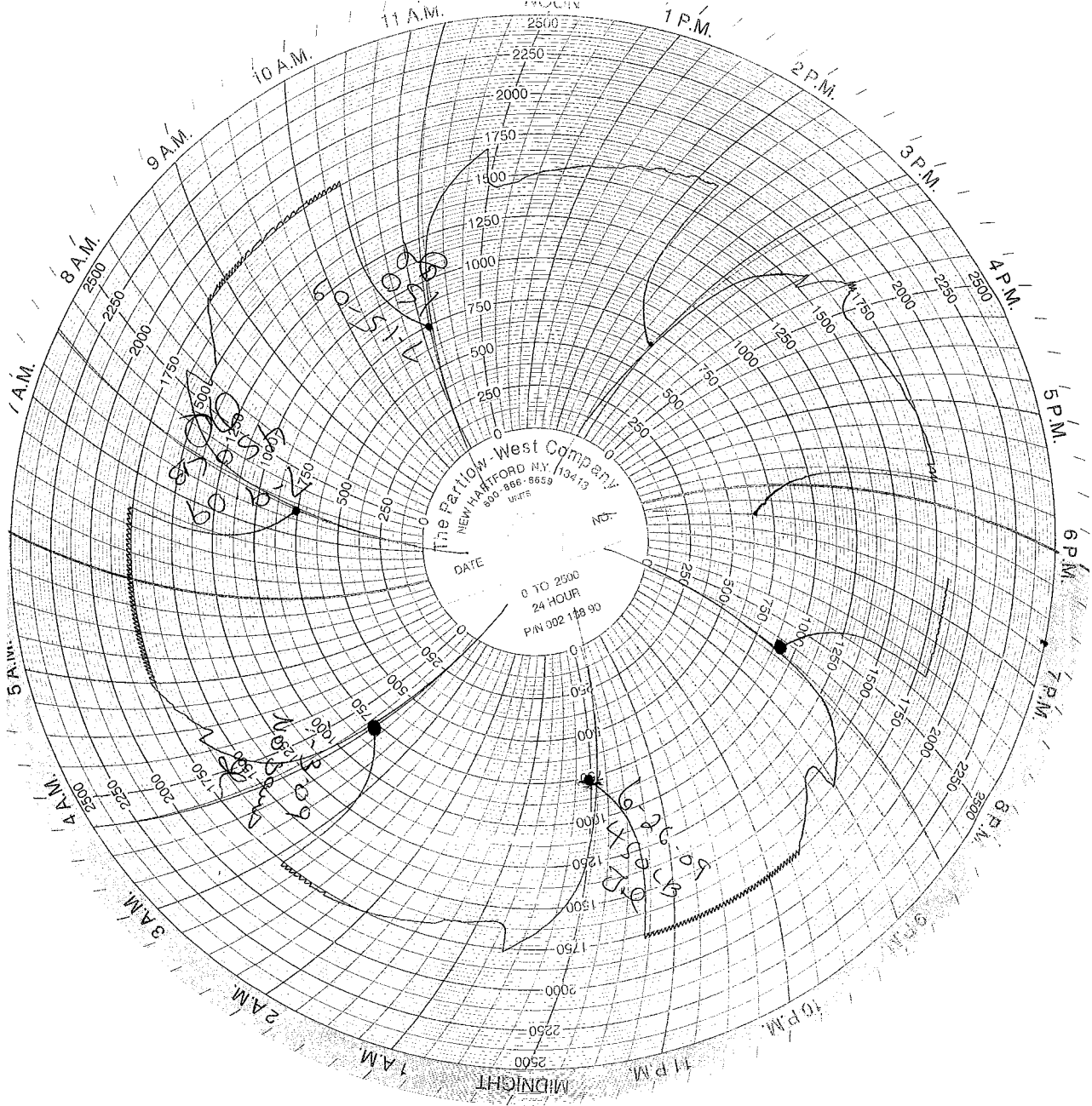
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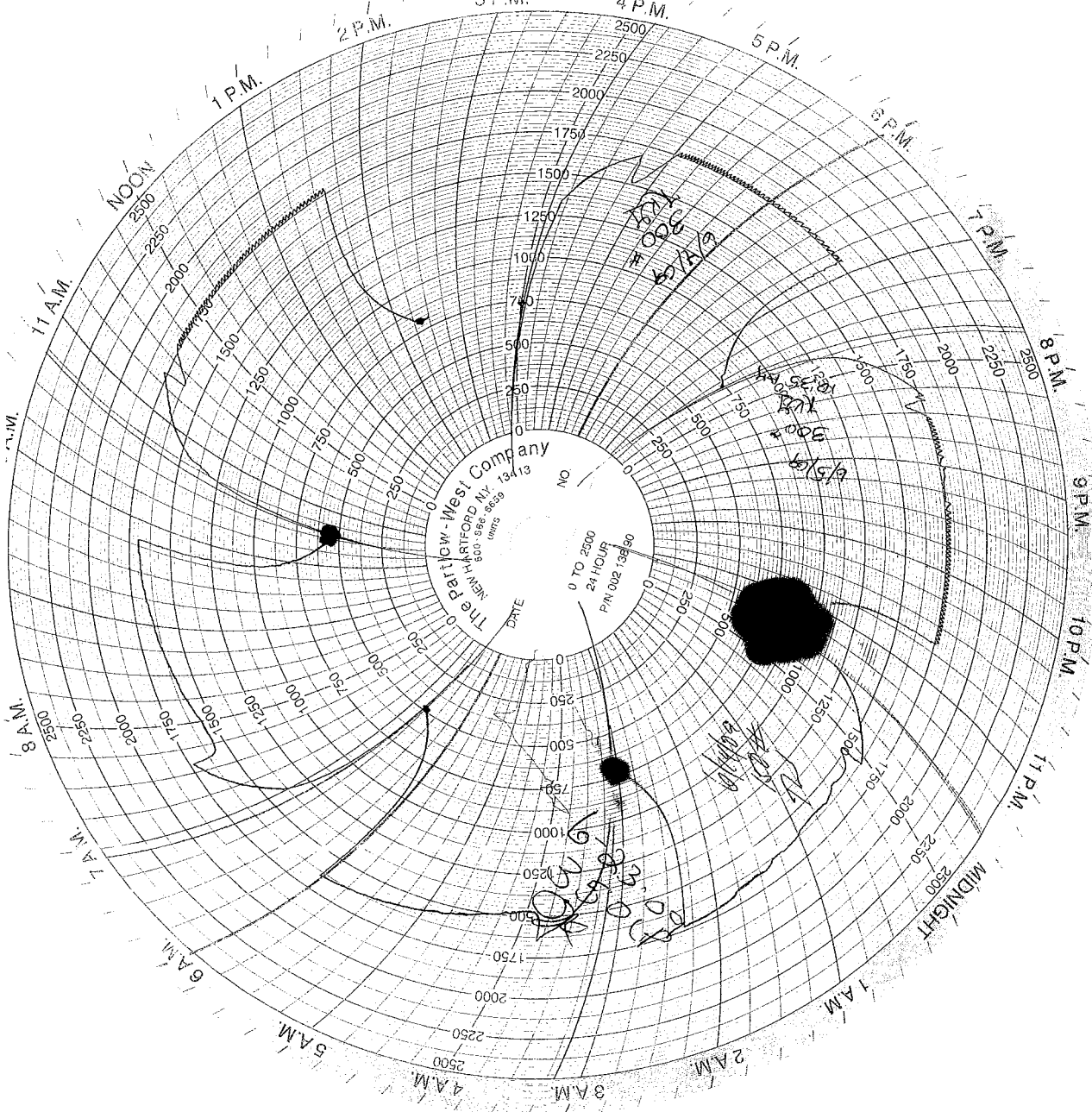
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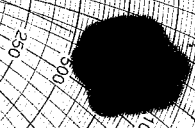


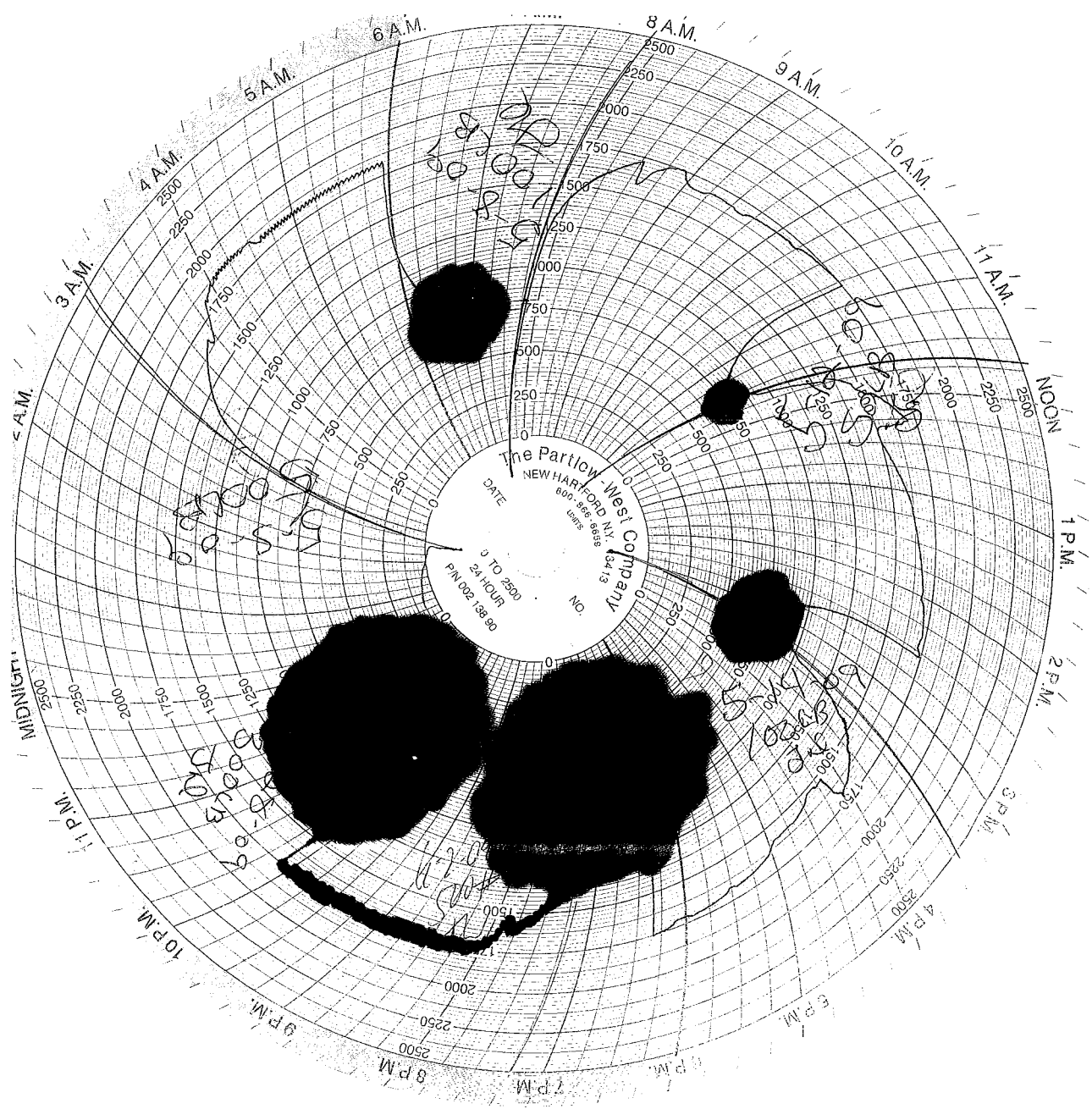
The Patton-West Company
NEW HARTFORD, N.Y. 13413
600-564-8839
DATE _____
0 TO 2500
24 HOUR
P.M. 002 : 13880

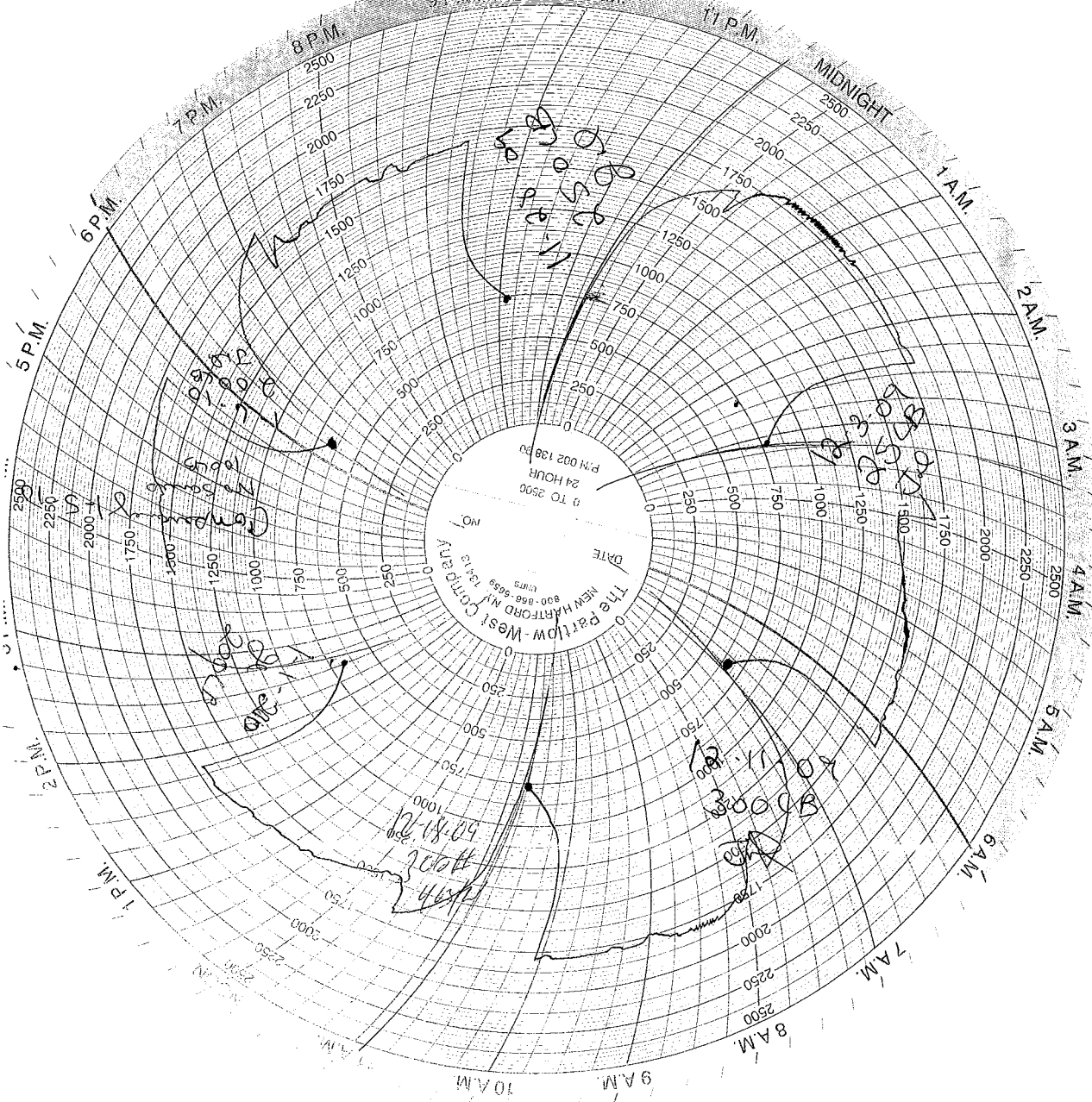
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M. 200
5/24/67







The Patton-West Company
NEW HARTFORD, N.Y. 12418
800-926-5533
NO. 12418
DATE
9 TO 3500
24 HOUR
P.M. 002 138 BU

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