

SOUTHWEST RESEARCH INSTITUTE

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ENGINE, FUEL, AND VEHICLE RESEARCH DIVISION
TELECOPIER: (210) 522-2019

July 21, 1993

Mr. Don Means
Sonic Dry Clean Inc.
12255 Kirkham Rd., Suite 200
Poway, CA 92064

VIA FAX: (619) 679-3854

Subject: SwRI Project No. 03-4641-043, "Air Filter Testing."

Reference: Sonic Dry Clean Purchase Order No. 1149 Dated June 30, 1993

Dear Mr. Means:

This report presents results of efficiency and dust capacity tests conducted on one new and three dry cleaned air filter elements provided by Sonic Dry Clean Inc. for evaluation. These elements were identified SDC-0 (CAT 6I2505), SDC-2 (6I2505), SDC-2 (6I2507), and SDC-3 (6I2507), with the -0, -2, and -3 designating the number of cleanings accomplished on each element. Testing was conducted in accordance with the SAE J726 JUN87 Air Cleaner Test Code. Clean element pressure drop, initial and cumulative efficiency, and dust capacity were measured. The cumulative efficiency/dust capacity test was conducted at 1240 scfm (100 Kpa, 25 °C) using PTI Fine Test Dust (Batch 4433B) at a concentration of 1 g/m³ air (0.028 g/ft³ air). The initial efficiency test was run for thirty (30) minutes using PTI Fine Test Dust at a concentration corresponding to 1 g/ft² of media (0.21 g/m³ air; 0.0039 g/ft³ air). Testing was conducted with each element installed in a 1P7330 Caterpillar housing with 6I3833 radial seal kit. The filter elements were visually inspected for workmanship and quality of gaskets and seals before and after testing. No defects were noted, with each element showing a high level of workmanship.

The test sequence was as follows: measure clean element pressure drop as a function of airflow rate, conduct initial efficiency and the cumulative efficiency tests while measuring dust capacity to approximately 20 inches of water terminal pressure drop.

Test results are presented in Table 1 and Figures 1 and 2. Table 1 gives initial and cumulative efficiency and dust capacity. Figure 1 shows the clean element pressure drop across the assembly (element and housing) as a function of airflow rate. Figure 2 shows pressure drop as a function of dust fed to the element and housing. Dust capacity, in Table 1, represents the amount of dust fed to the assembly (element and housing) at a terminal pressure drop of 20 inches of water across the assembly. There were no leaks in the seals, media, or plastisols.



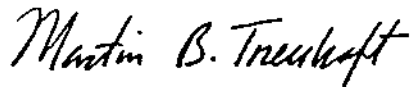
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Mr. Don Means
Sonic Dry Clean Inc.
July 13, 1993
Page 2

If you have any questions concerning the test results or the project, please do not hesitate to call me at (210) 522-2626. For your convenience, our facsimile number is (210) 522-5720. SwRI is pleased to have been of service, and we look forward to working with you in the future.

Sincerely,



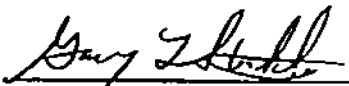
Martin B. Treuhaft
Senior Research Engineer
Vehicle Research and Development

MBT:rh

Attachments

cc: Sherry Twilligear, Contracts

APPROVED:



Gary L. Stecklein, Director
Department of Vehicle Systems Research

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03-4641-043
Element Tested 6/93

TABLE 1. INITIAL AND CUMULATIVE EFFICIENCY AND DUST CAPACITY
DUST: PTI Fine @0.028 g/ft³ air, except for initial efficiency
(1 g/ft³ media; 0.0039 g/ft³ air for 30 min.), AIRFLOW RATE: 1240 scfm

Element tested in 1P7330 Caterpillar housing with 6I3833 radial seal kit

Element Identification	Element P/N	Initial* Efficiency, %	Cumulative* Efficiency, %	Dust** Capacity, g	Number of Pleats***	Calc. Media Area, ft ²	Comments
SDC-0	CAT 6I2505 (New)	98.37	99.79	1755	412	145.2	No leaks
SDC-2	SDC-2 CAT 6I2505 (2 clngs)	99.64	99.96	1590	411	144.8	No leaks
SDC-2	SDC-2 CAT 6I2507 (2 clngs)	99.49	99.92	1735	410	144.5	No leaks
SCD-3	SDC-3 CAT 6I2507 (3 clngs)	99.66	99.95	1680	406	143.1	No leaks

* Efficiency $\left[1 - \frac{\text{wt. gain of absolute}}{\text{wt. of dust fed}} \right] \times 100.$

** At 20 inches of water pressure drop across the assembly (element and housing).

*** Pleat depth: 1 3/4 inches
Pleat height: 1 1/2 inches



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CLEAN ELEMENT PRESSURE DROP vs. AIRFLOW RATE
 (element tested in Caterpillar 1P7330 housing)

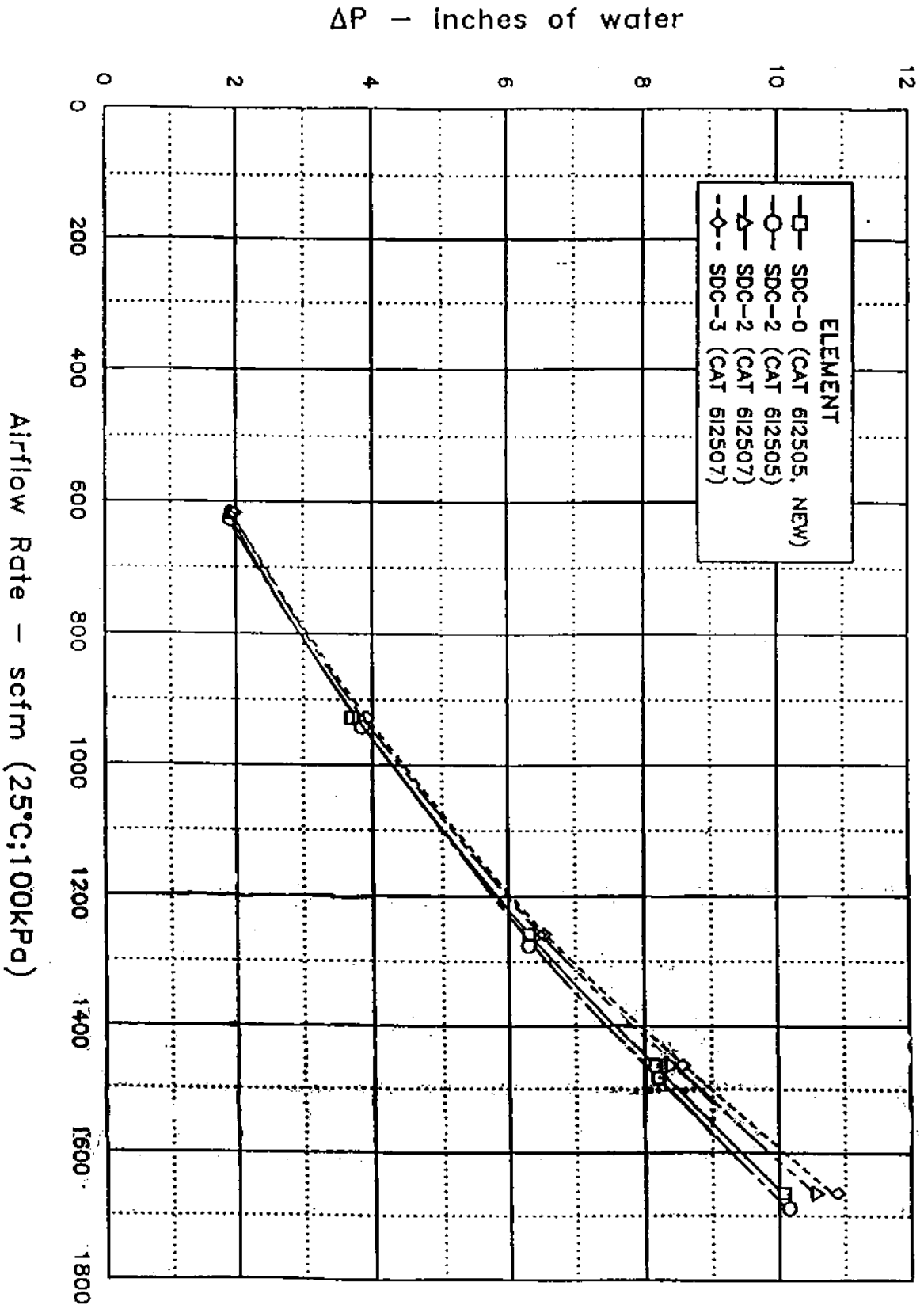


FIGURE 1

DUST HOLDING CAPACITY; PRESSURE DROP VS DUST FED
 PTI Fine Test Dust @0.028 g/ft³Air
 1240 cfm (100kPa; 25°C)
 (element tested in Caterpillar 1P7330 housing)

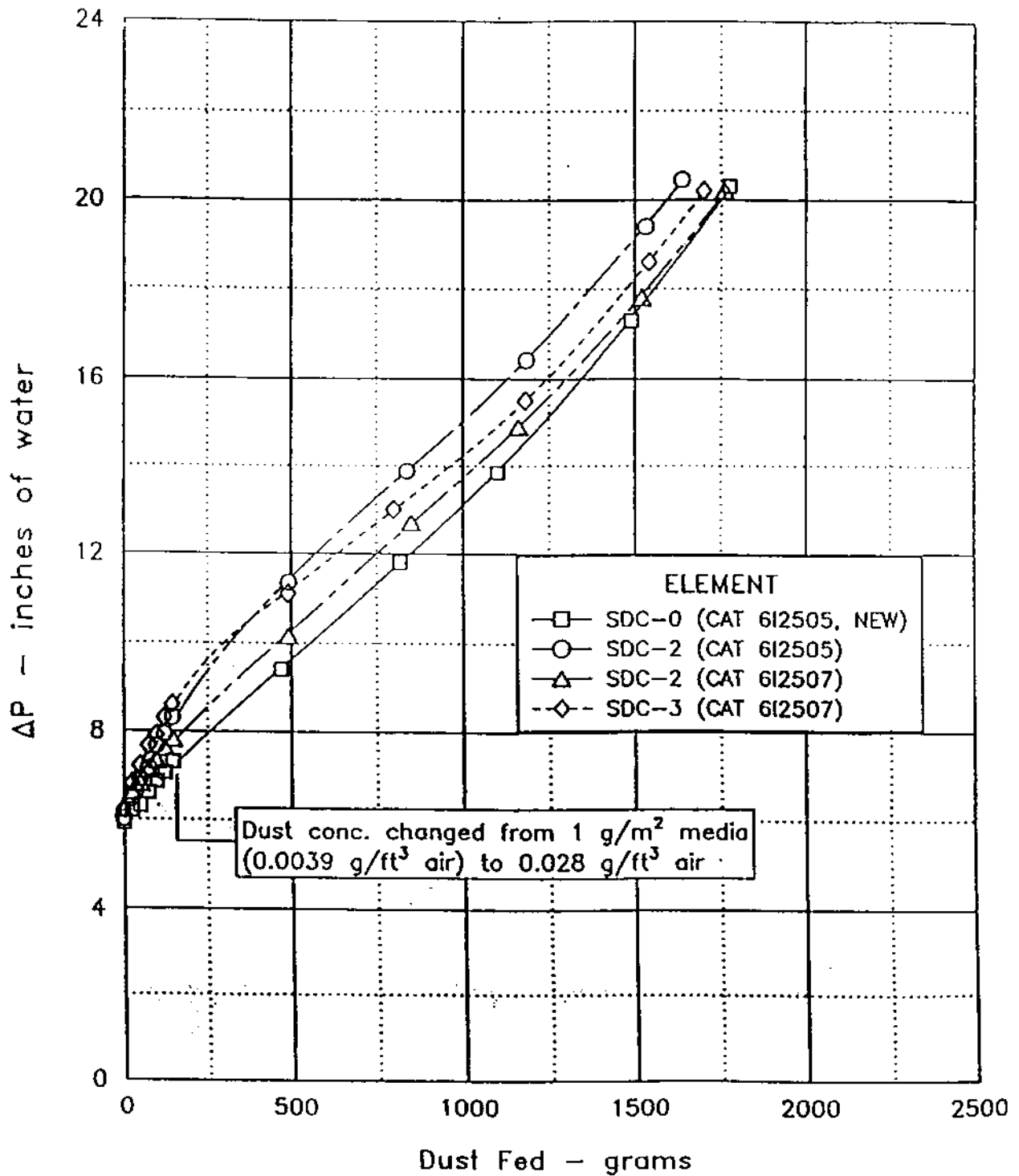


FIGURE 2