

STUDY OF LUBRICANT CIRCULATION IN HVAC SYSTEMS

Volume II - Compilation of Program Test Data

**Final Technical Report
March 1995 - April 1996**

**Frank R. Biancardi
H. Harvey Michels
Tobias H. Siemel
Dennis R. Pandey**

**UNITED TECHNOLOGIES RESEARCH CENTER
411 Silver Lane
East Hartford, CT 06108**

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Study of Lubricant Circulation in HVAC Systems

Volume II - Compilation of Program Test Data

SUMMARY

This volume contains all of the program test data essentially as taken from the laboratory dynamic test facility during the sequence of runs.

For the readers' convenience [Table 3.1](#) from Volume I of the report is included to describe the refrigerant/lubricant test series (six) and the actual chronological test run number. [Figures 2.1](#) and [2.2](#) from Volume I are also included here for reference.

In the body of this Volume, each of the test series is presented separately, again for the convenience of the reader.

[Volume I](#) contains a complete description of the program scope, objective, test results summary, conclusions, description of test facility and recommendations for future effort.

Study of Lubricant Circulation in HVAC Systems

Volume II - Compilation of Program Test Data

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Relevant Information From **Volume I**

Table 3.1 Test Run with Test Number

Refrigerant/ Lubricant Test Series	Actual Chronological Test Run Number			
	Cooling	Cooling Inj.*	Heating	Heating Inj.*
1) R22-3GS	1, 2, 35	41, 42	3, 4, 36, 40	37, 38, 39
2) R407C-3GS	5, 43, 44	45	6, 46, 47	48, 49
3) R407C-1GS	50, 51	†	52	†
4) R407C-SW32	7, 8	9, 10	11, 12, 13	14
5) R407C-SW68	15, 16	17, 18	19, 20, 25, 26	21, 22, 23, 24
6) R407C-RL32S	27, 28	31, 32, 33	29, 30, 34	†
* additional oil injected into compressor				
† no test run				

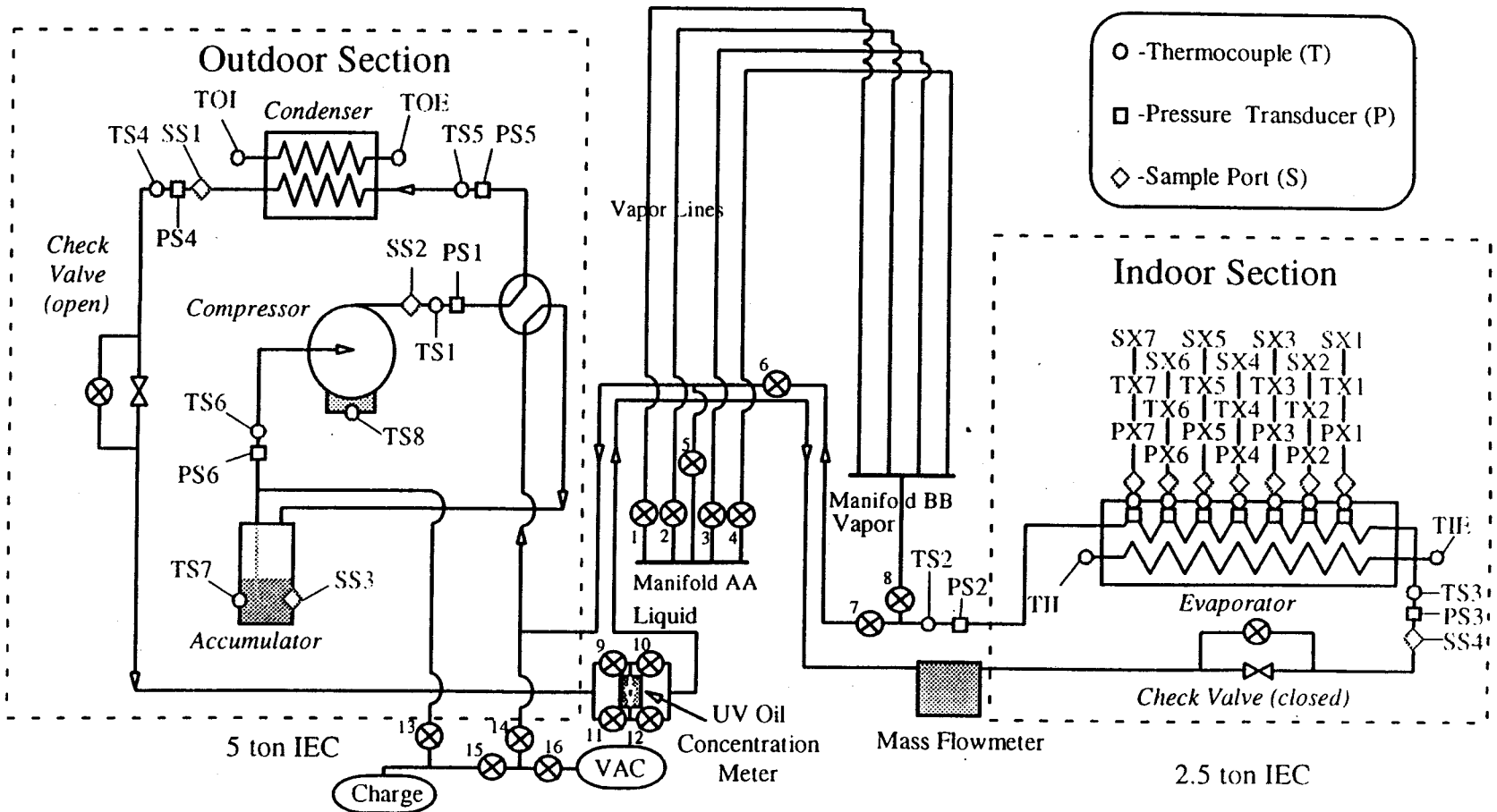


Figure 2.1. Oil Circulation Program Dynamic Test Facility - Cooling Mode

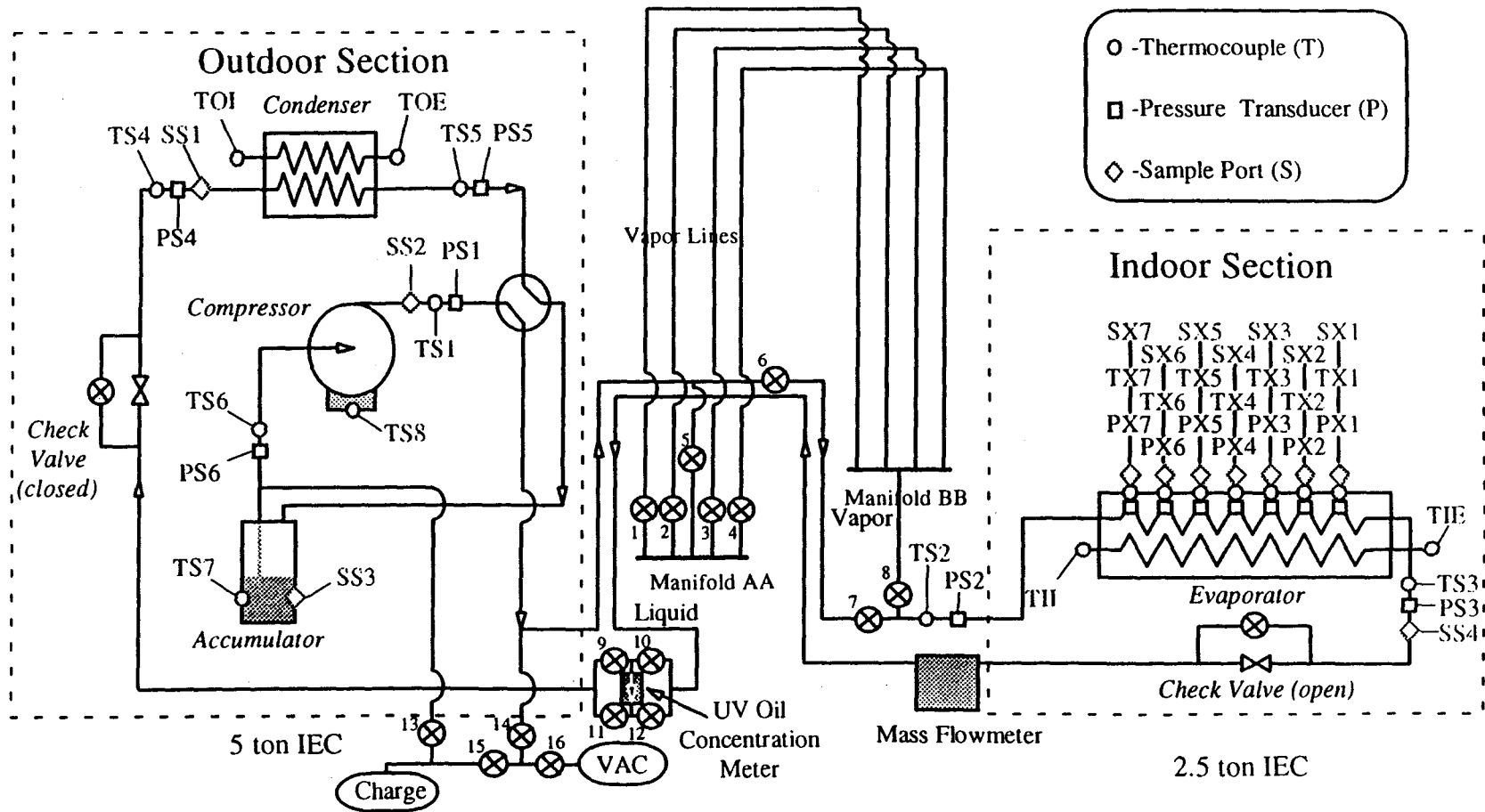


Figure 2.2. Oil Circulation Program Dynamic Test Facility - Heating Mode

Refrigerant/Lubricant Test Series

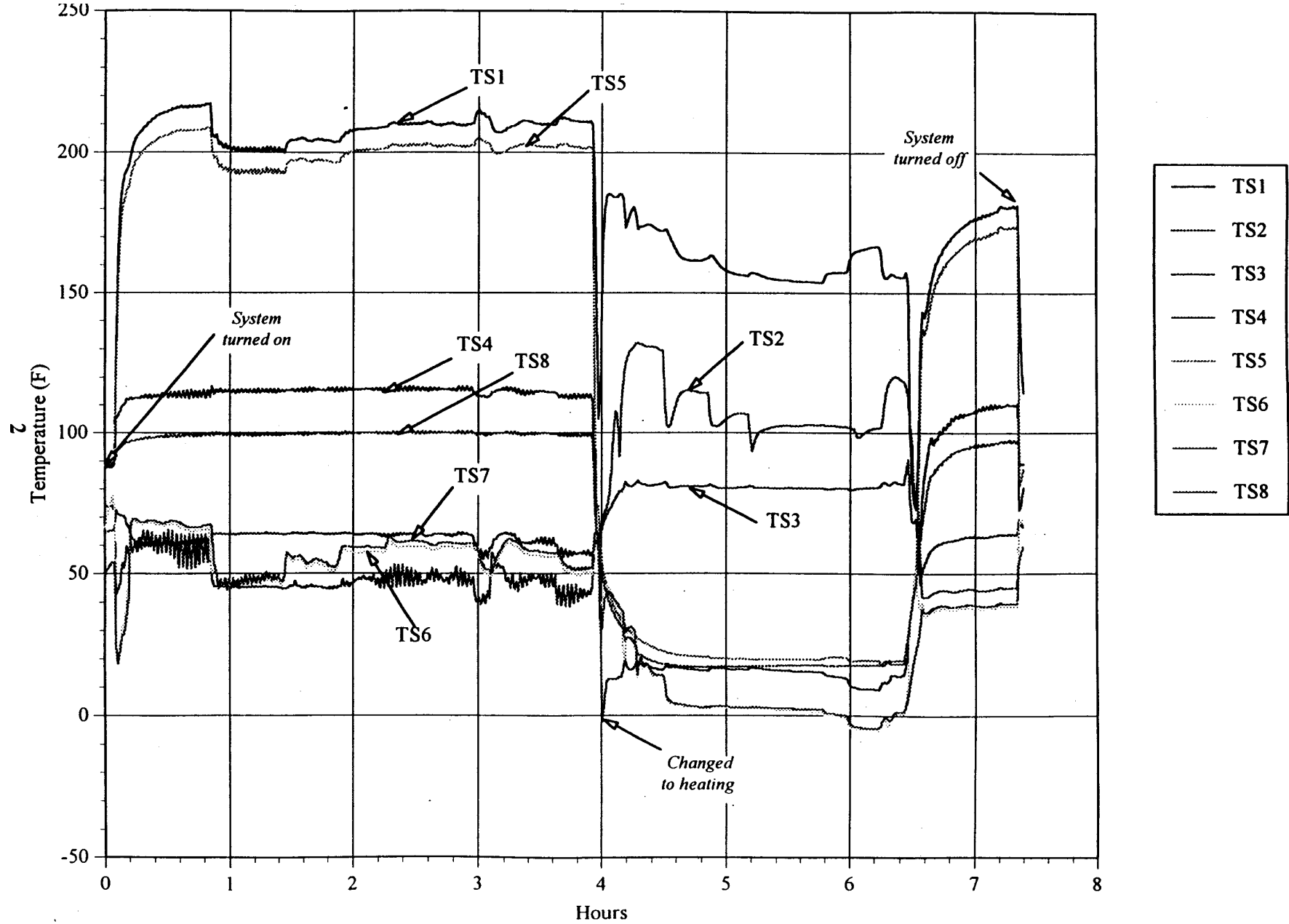
R22 - Suniso 3GS

Heat Pump R22-Suniso 3GS Oil Circulation Tests (35&36)

Cooling & Heating Modes - No Oil Injection

System Temperatures

SLO 2/23/96

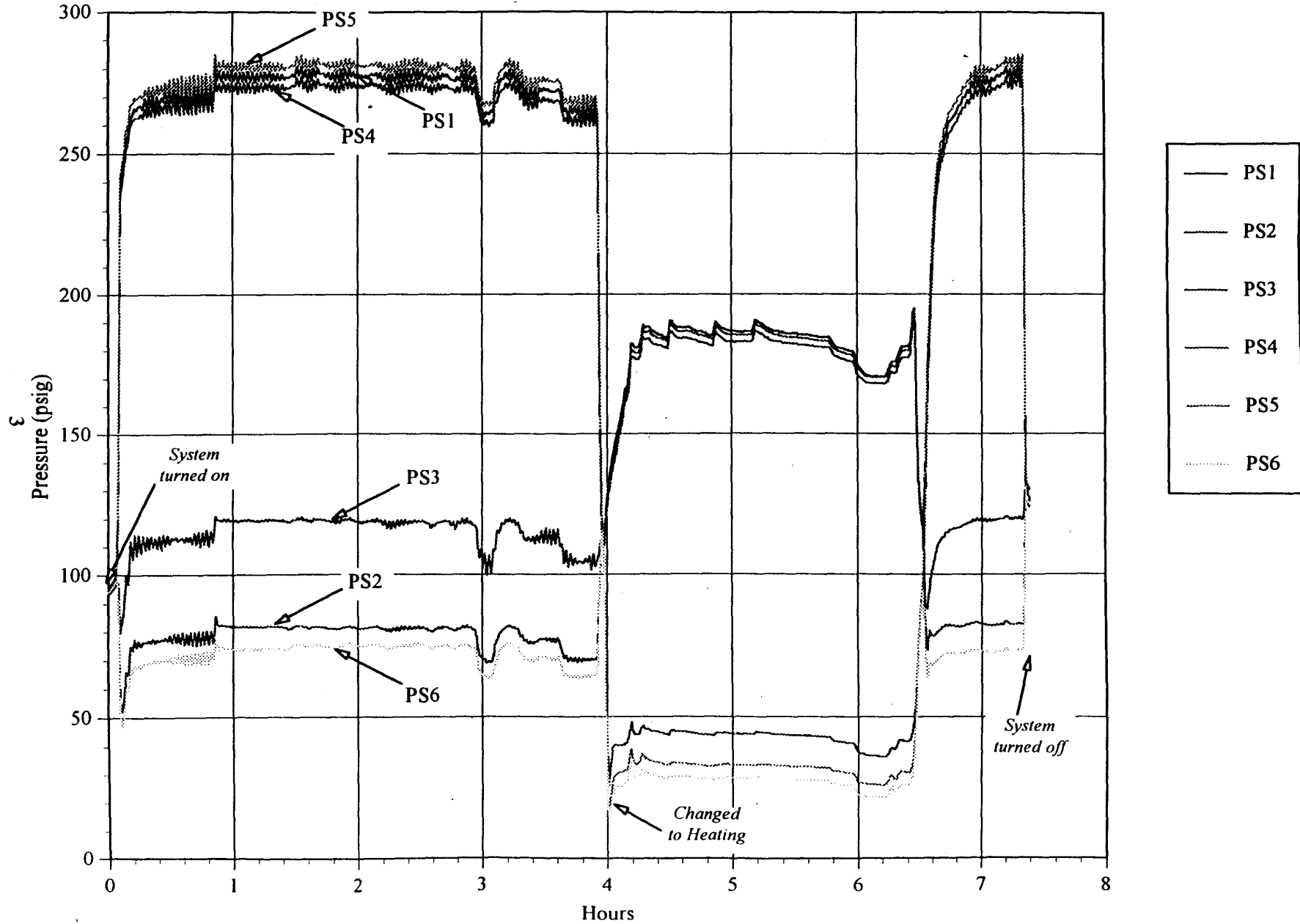


Heat Pump R22-Suniso 3GS Oil Circulation Tests (35&36)

Cooling & Heating Modes - No Oil Injection

SLO 2/23/96

System Pressures

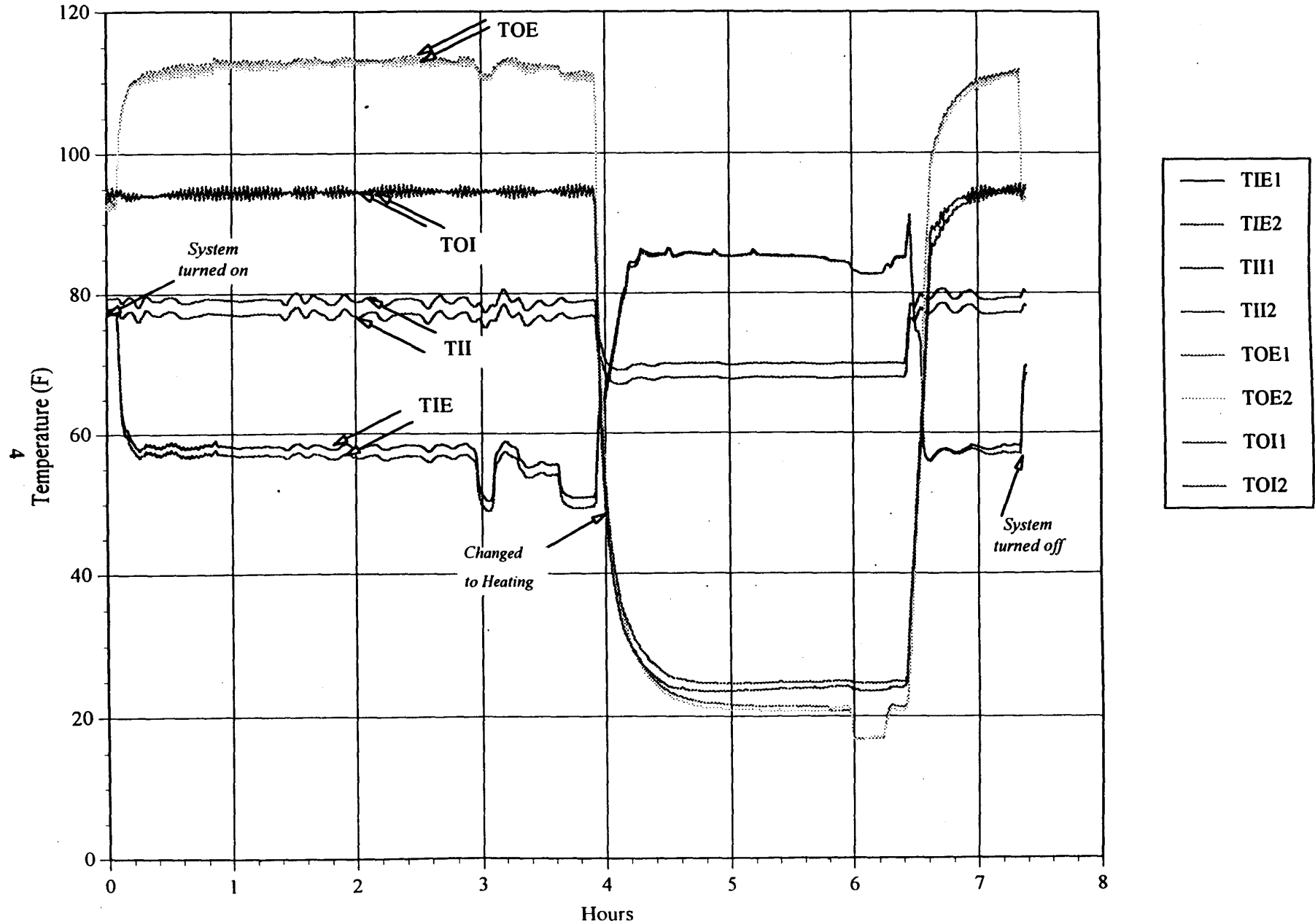


Heat Pump R22-Suniso 3GS Oil Circulation Tests (35&36)

Cooling & Heating Modes - No Oil Injection

SLO 2/23/96

Air Side Temperatures

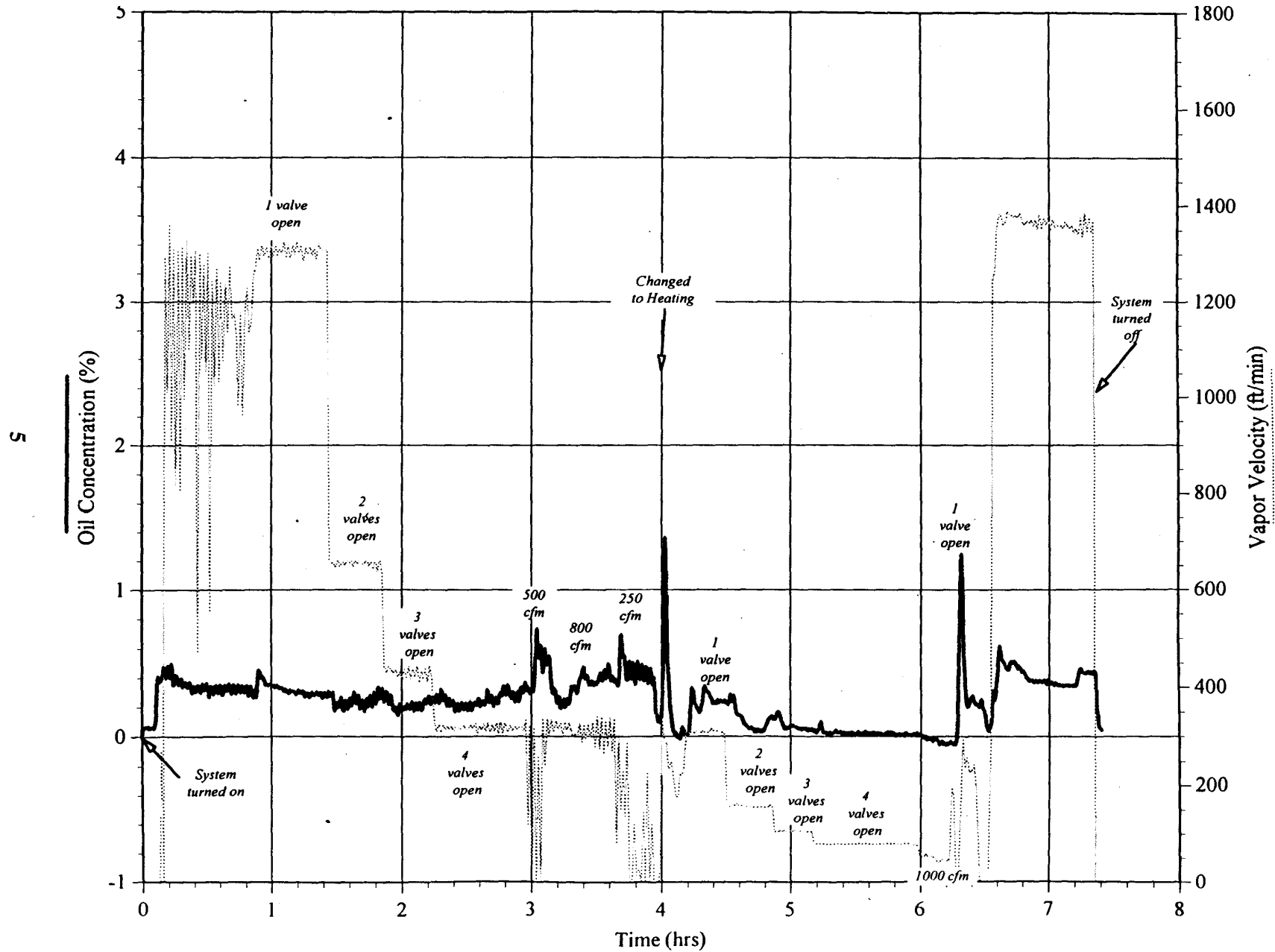


Heat Pump R22-Suniso 3GS Oil Circulation Tests (35&36)

Cooling & Heating Modes - No Oil Injection

SLO 2/23/96

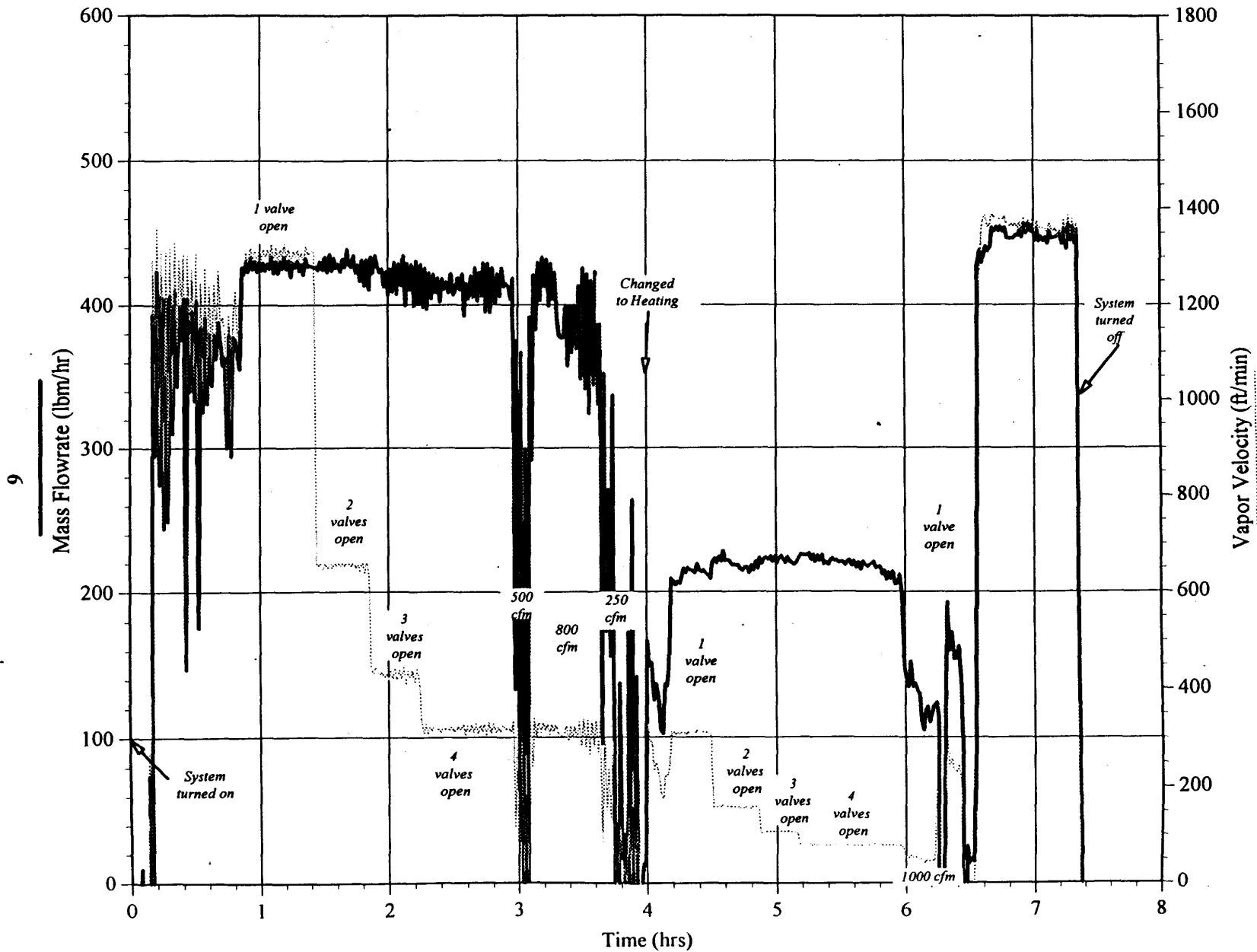
Oil Flows



Heat Pump R22-Suniso 3GS Oil Circulation Tests (35&36)

SLO 2/23/96

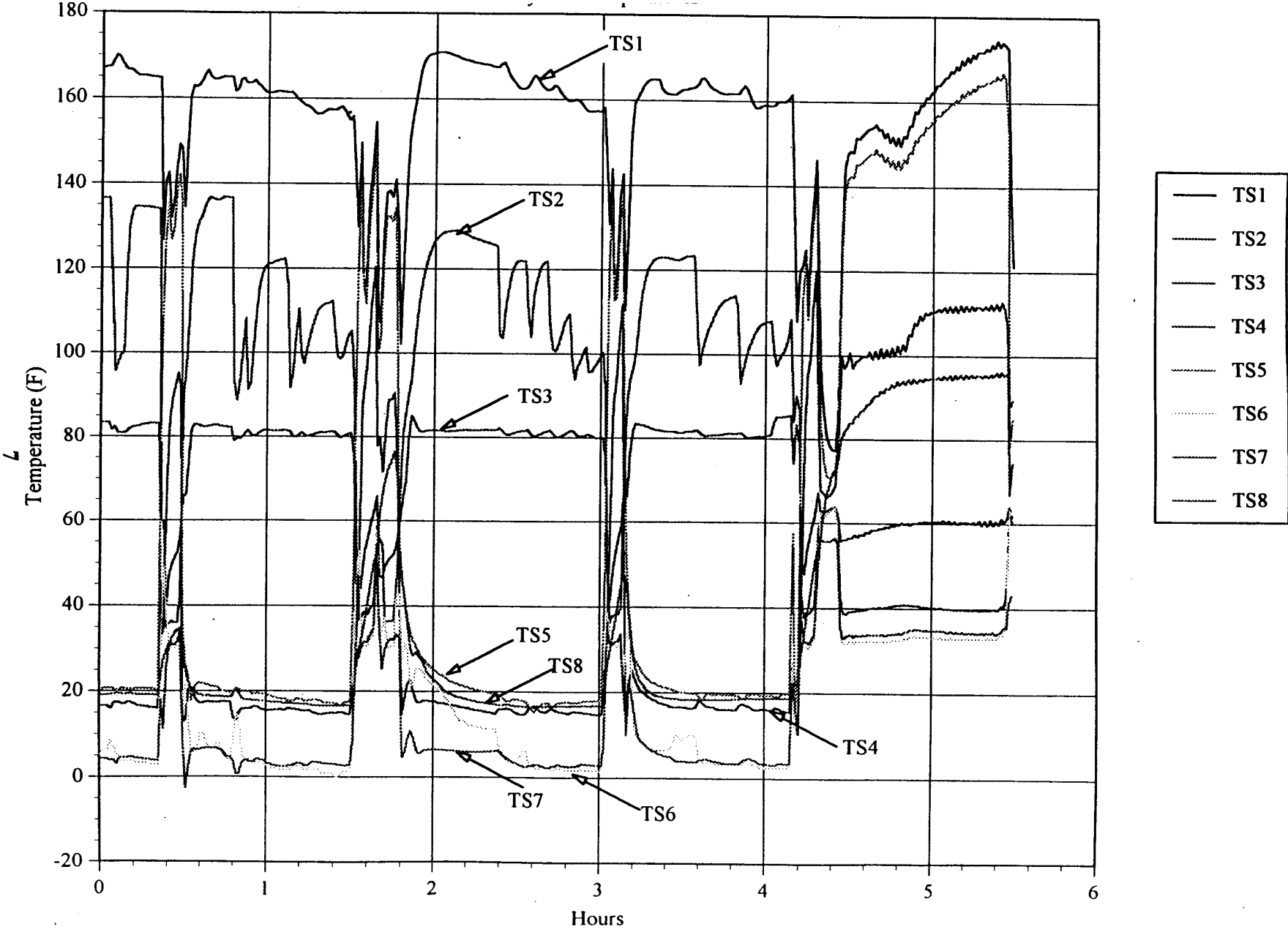
Cooling & Heating Modes - No Oil Injection



Heat Pump R22-Suniso 3GS Oil Circulation Tests (37-39)

SLO 2/23/96

Heating Mode - Oil Injection
System Temperatures

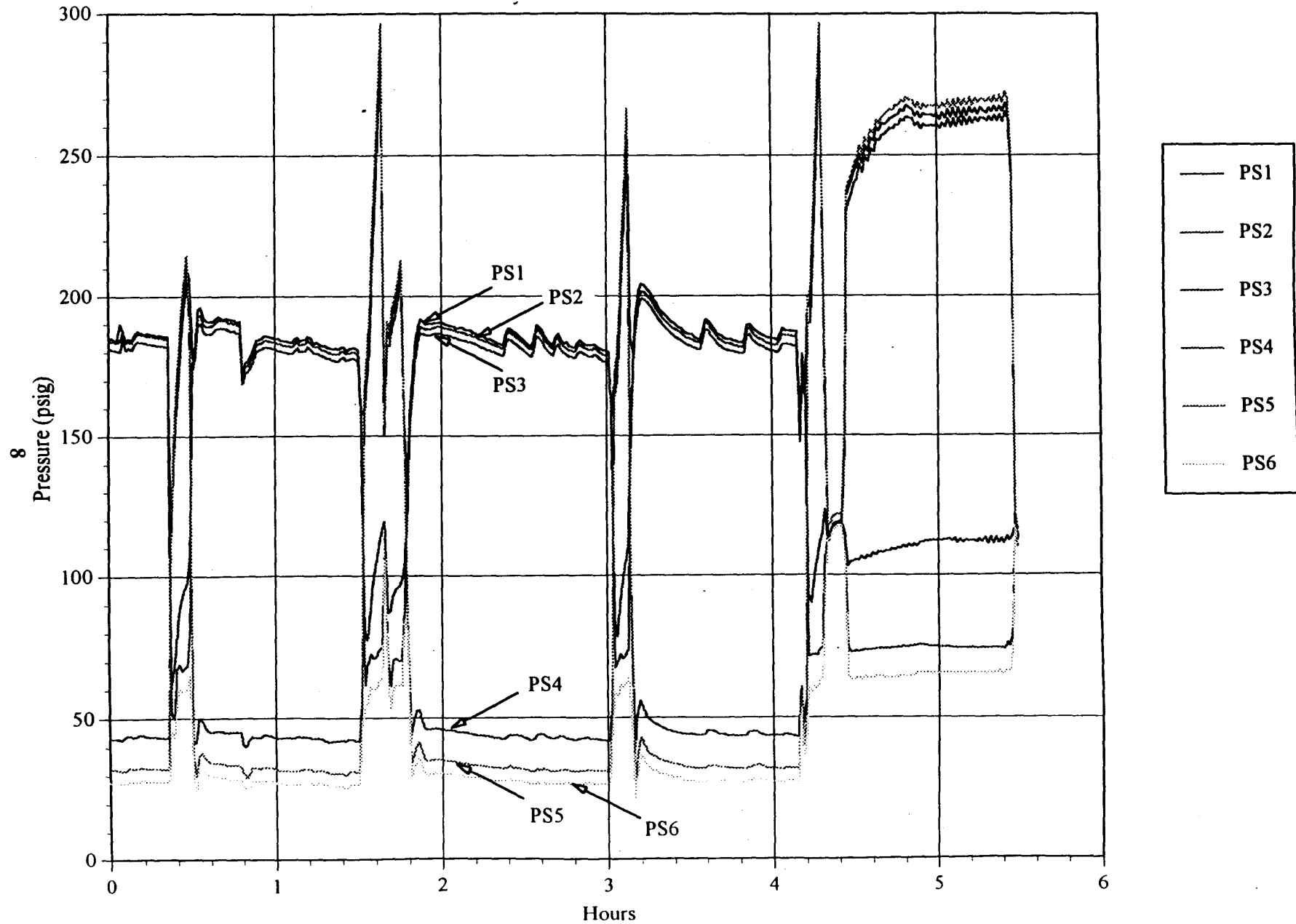


Heat Pump R22-Suniso 3GS Oil Circulation Tests (37-39)

SLO 2/23/96

Heating Mode - Oil Injection

System Pressures

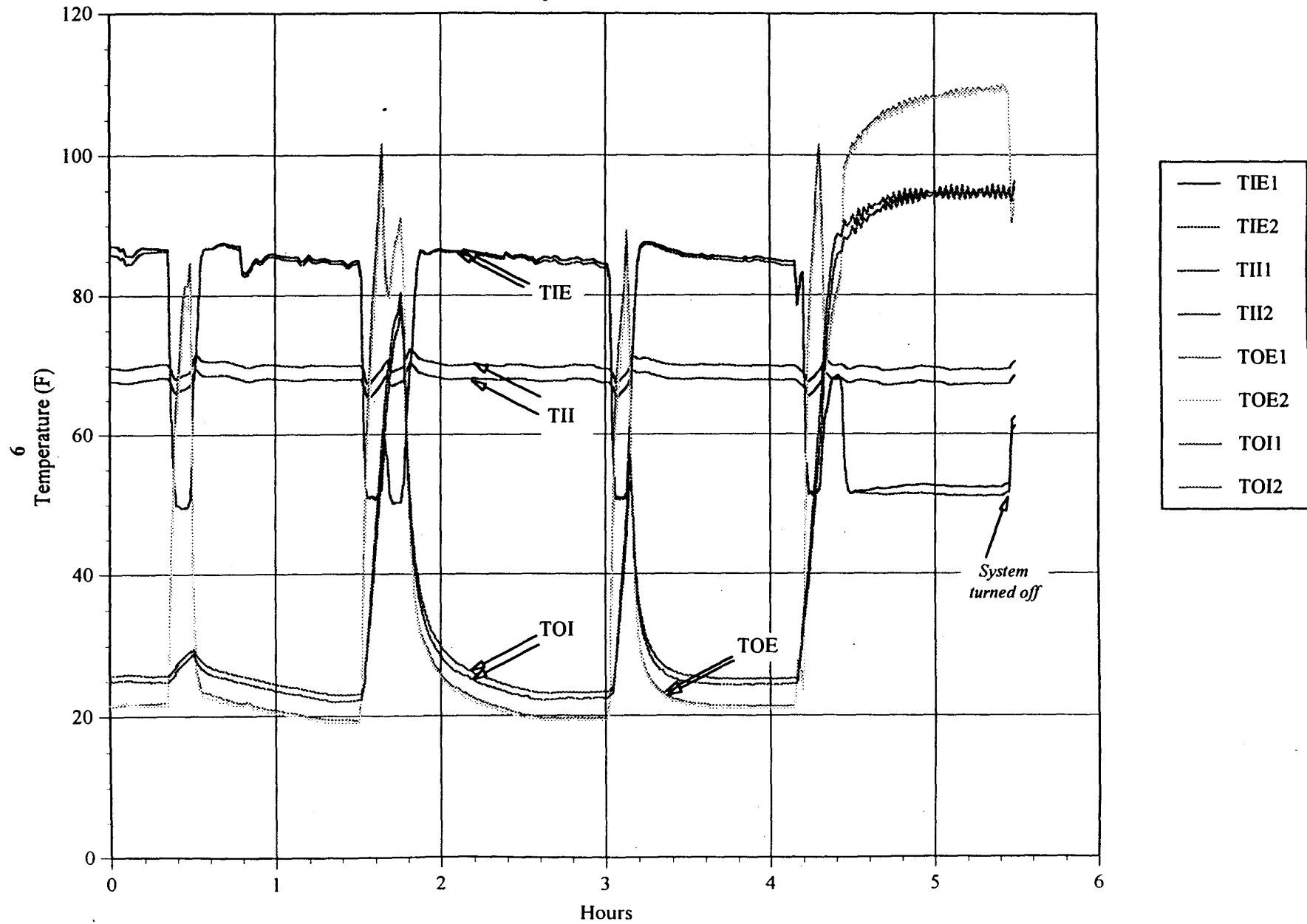


Heat Pump R22-Suniso 3GS Oil Circulation Tests (37-39)

SLO 2/23/96

Heating Mode - Oil Injection

Air Side Temperatures

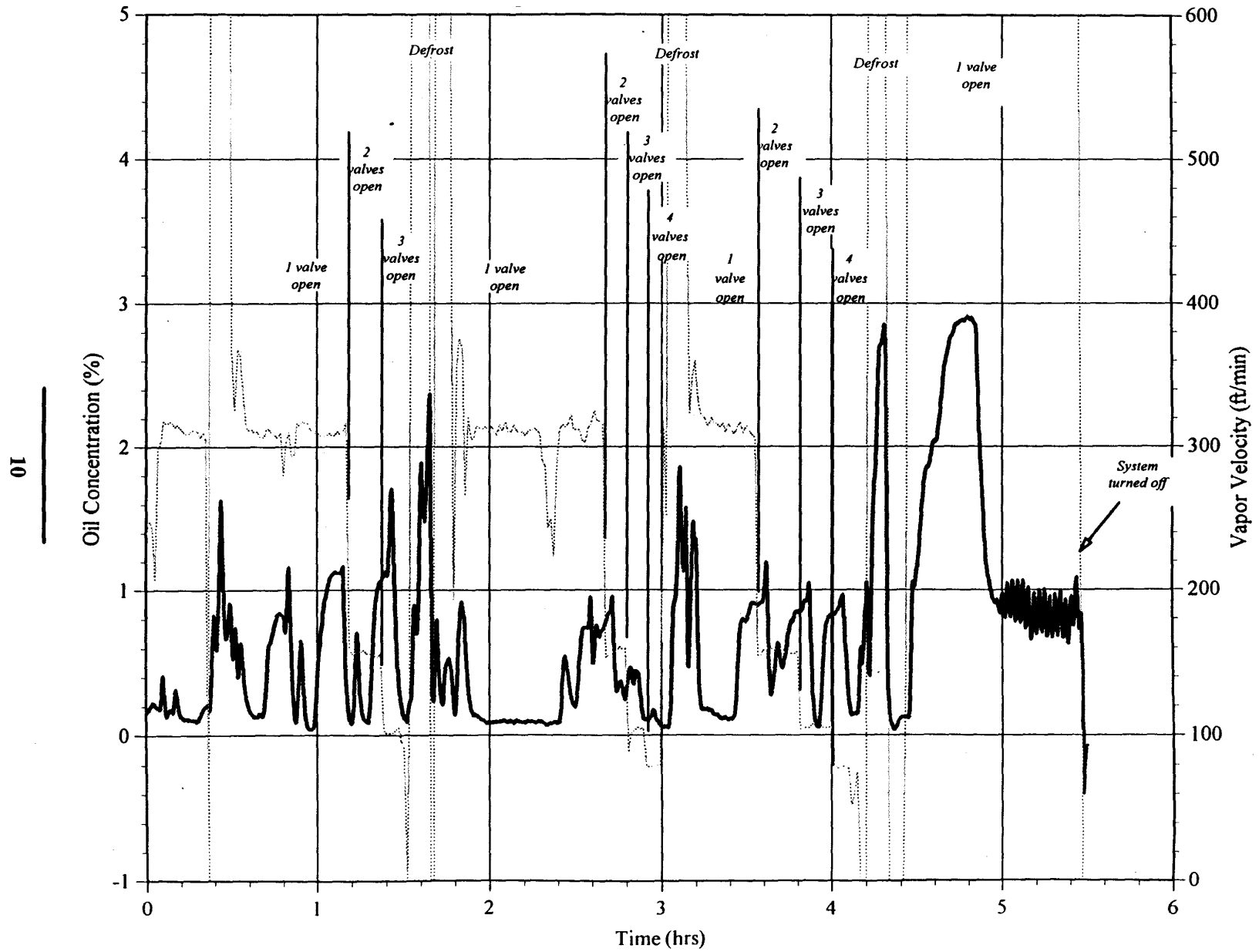


Heat Pump R22-Suniso 3GS Oil Circulation Tests (37-39)

SLO 2/23/96

Heating Mode - Oil Injection

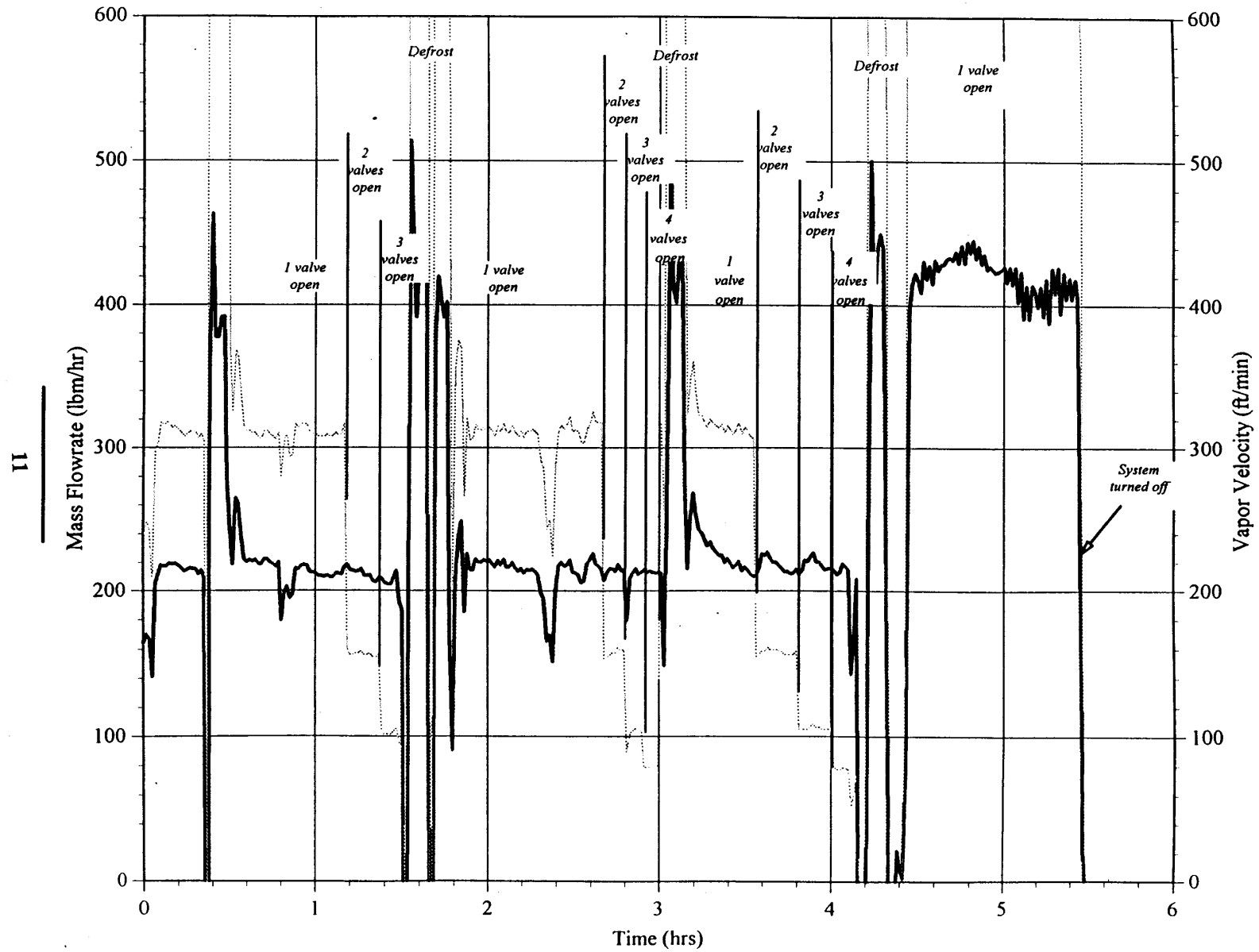
Oil Flows



Heat Pump R22-Suniso 3GS Oil Circulation Tests (37-39)

Heating Mode - Oil Injection

SLO 2/23/96

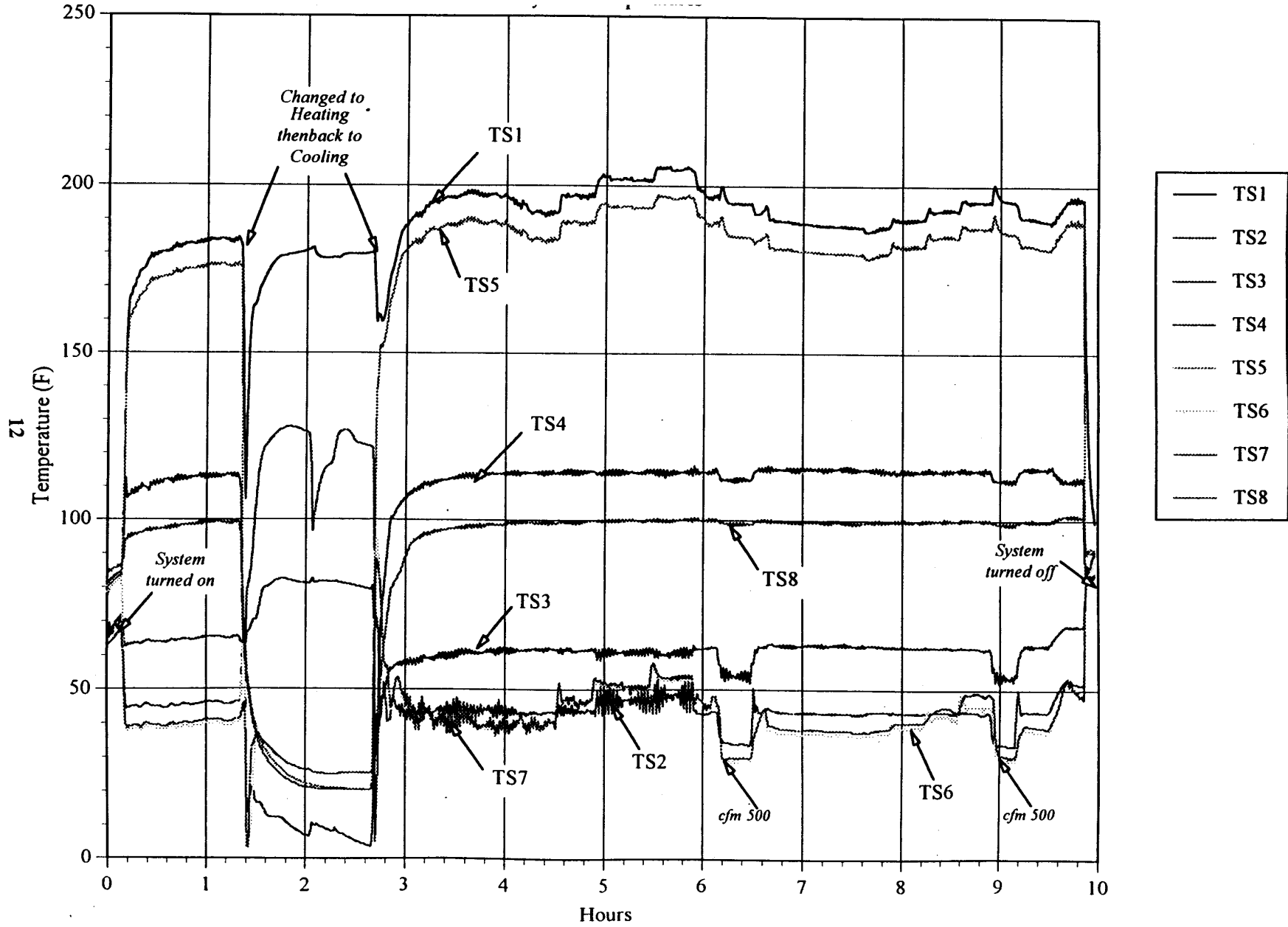


Heat Pump R22-Suniso 3GS Oil Circulation Tests (40-42)

Heating (No Oil Injection) & Cooling (Oil Injection) Mode

SLO 2/26/96

System Temperatures

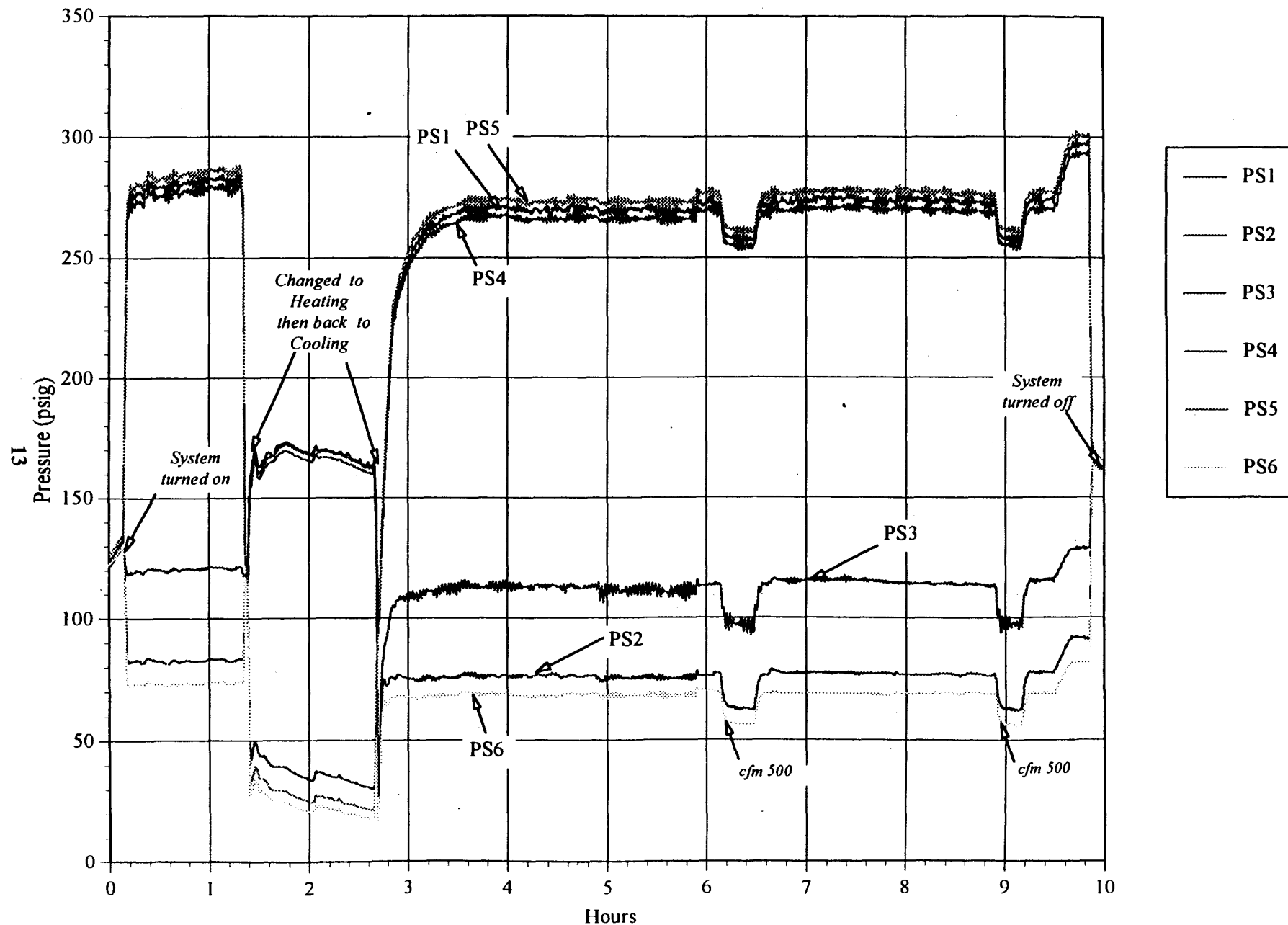


Heat Pump R22-Suniso 3GS Oil Circulation Tests (40-42)

Heating (No Oil Injection) & Cooling (Oil Injection) Mode

SLO 2/26/96

System Pressures

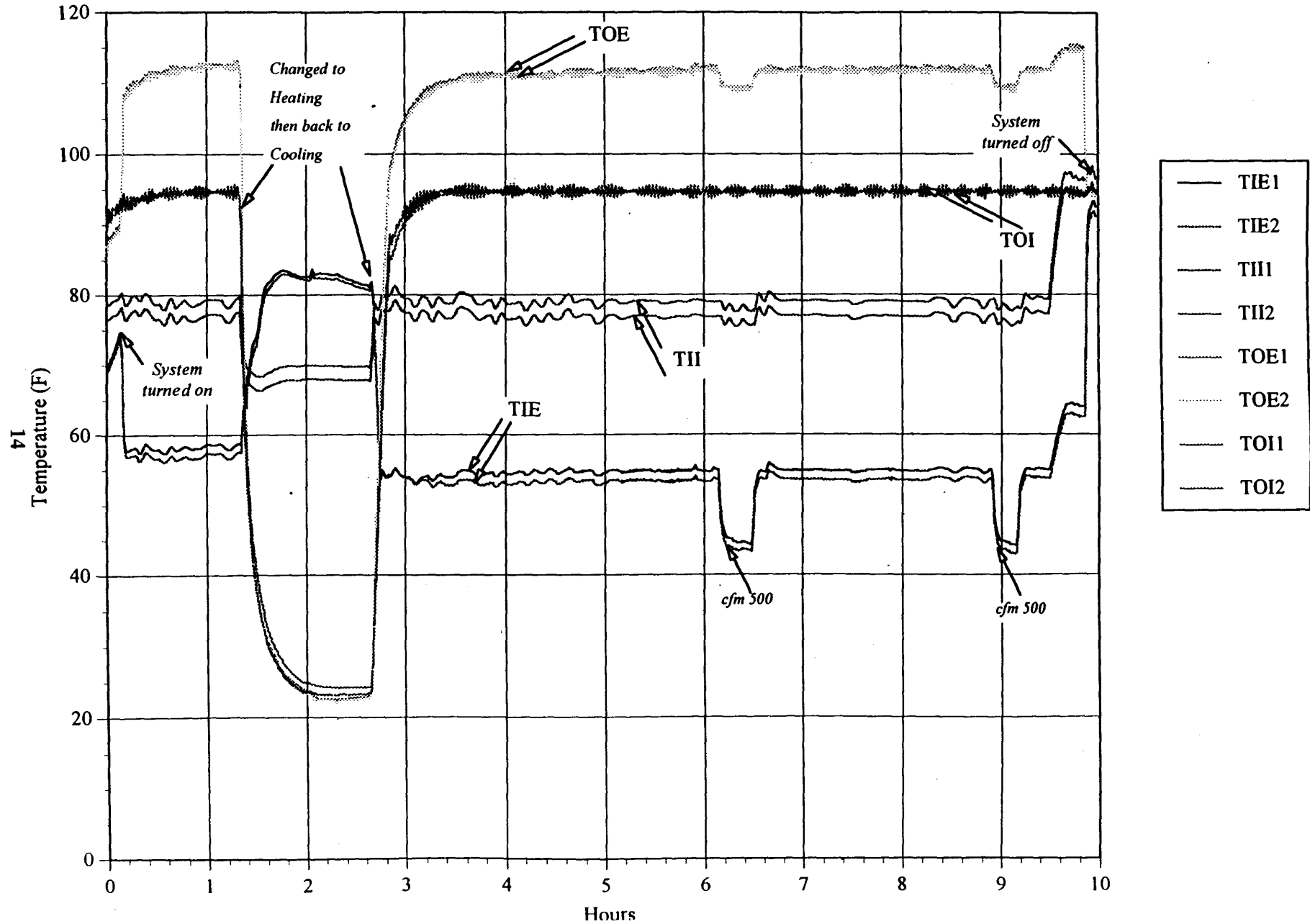


Heat Pump R22-Suniso 3GS Oil Circulation Tests (40-42)

Heating (No Oil Injection) & Cooling (Oil Injection) Mode

SLO 2/26/96

Air Side Temperatures

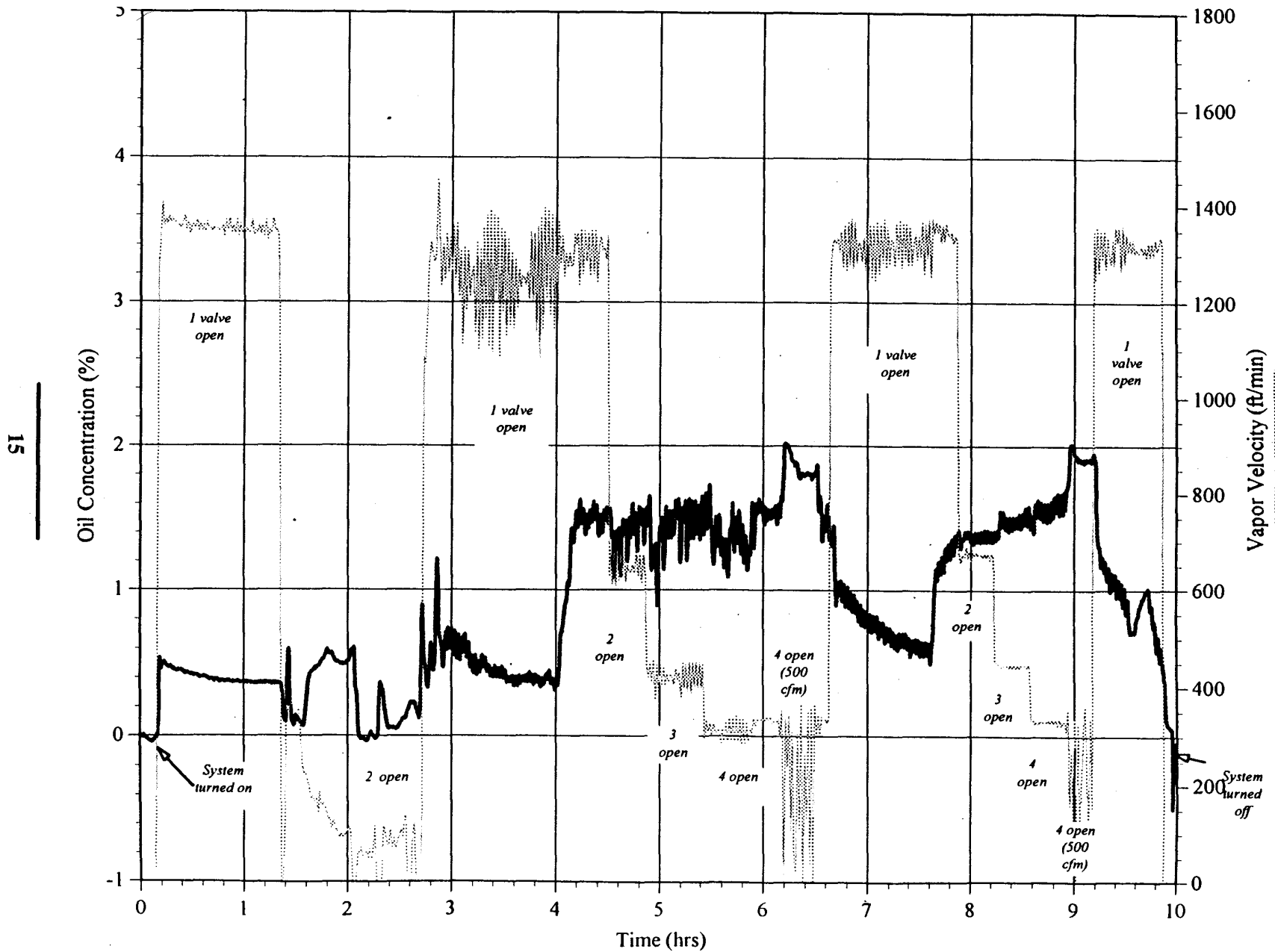


Heat Pump R22-Suniso 3GS Oil Circulation Tests (40-42)

Heating (No Oil Injection) & Cooling (Oil Injection) Mode

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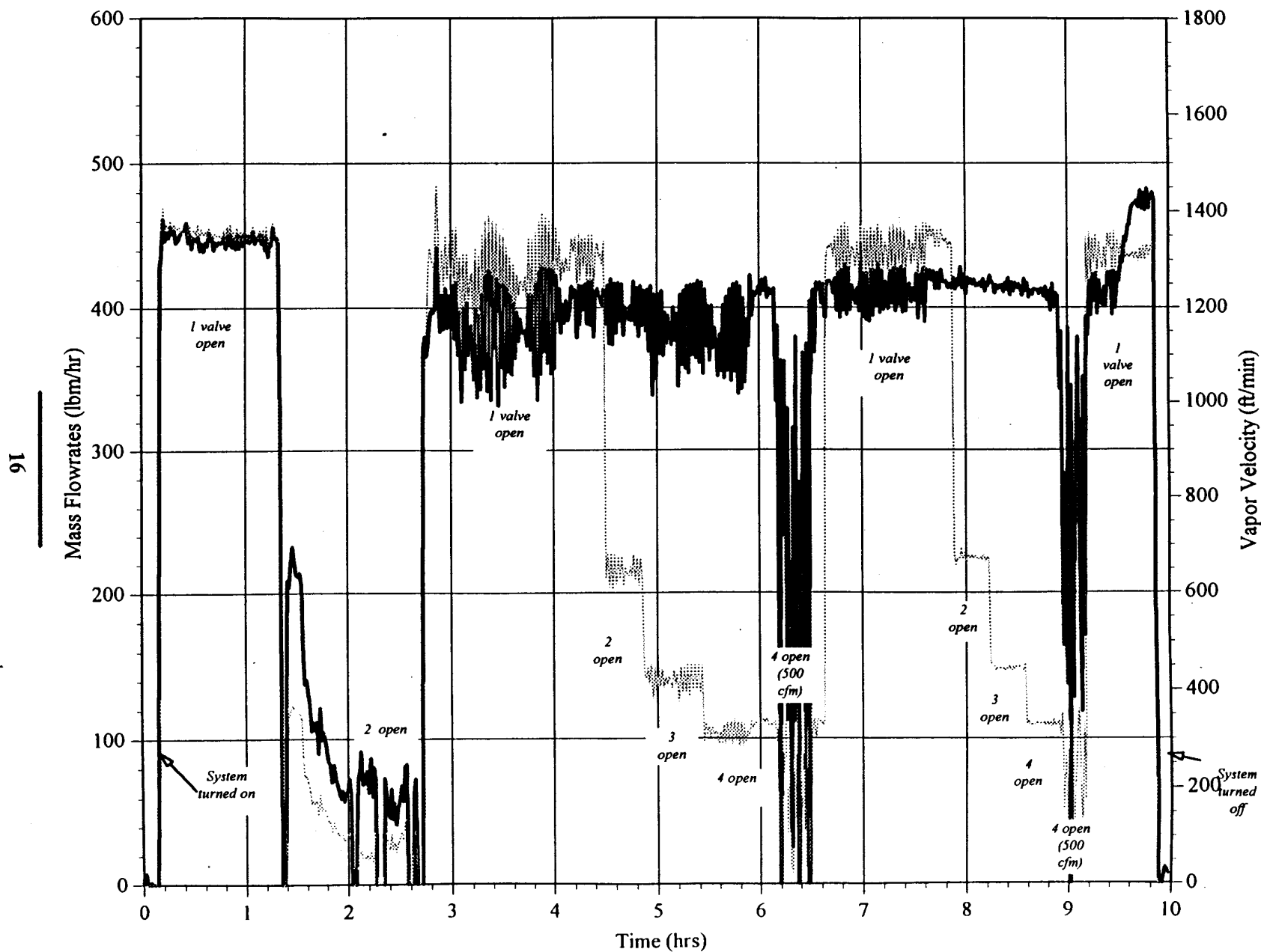
Oil Flows



Heat Pump R22-Suniso 3GS Oil Circulation Tests (40-42)

SLO 2/26/96

Heating (No Oil Injection) & Cooling (Oil Injection) Mode



Refrigerant/Lubricant Test Series

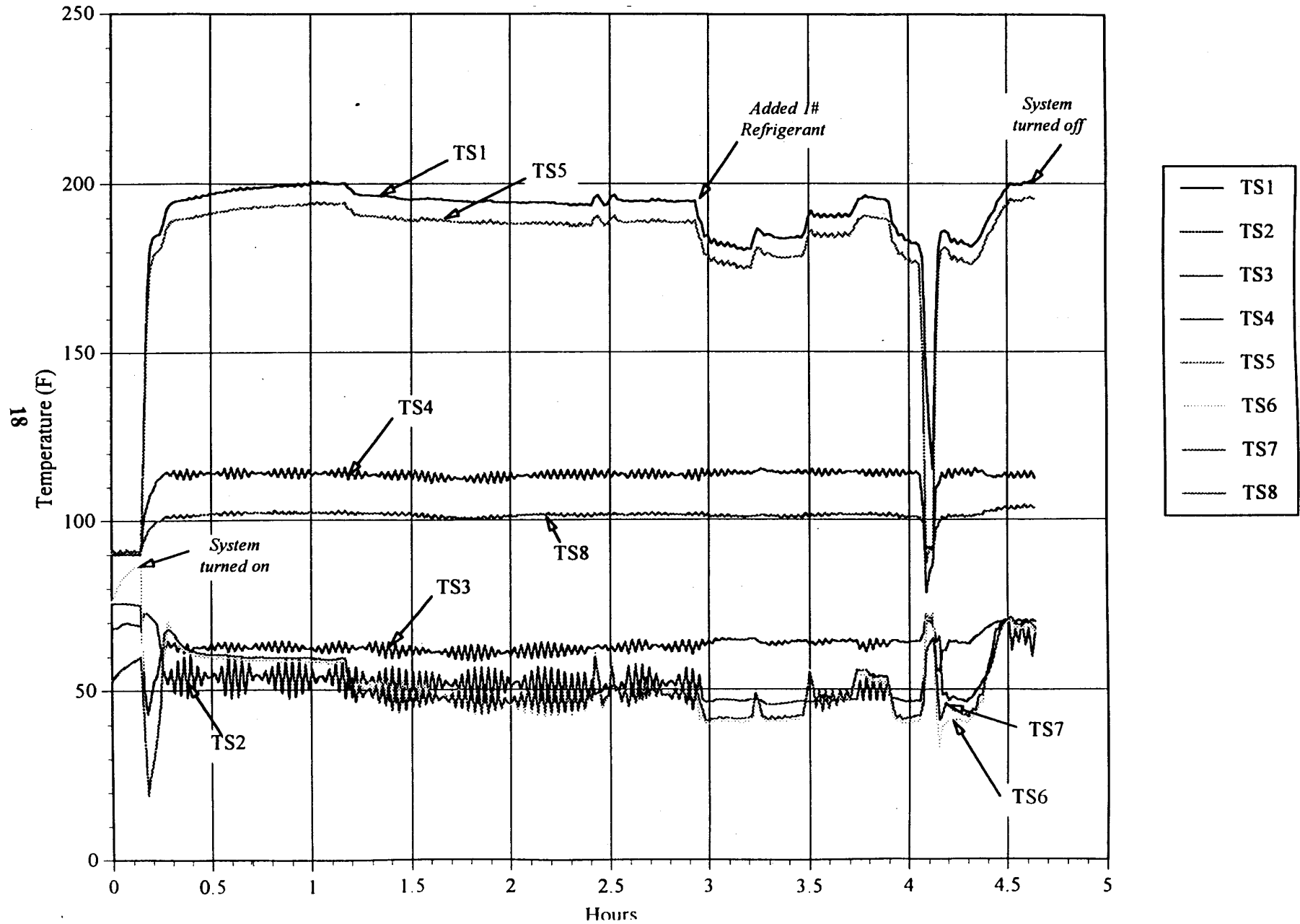
R407C - Suniso 3GS

Heat Pump R407C-Suniso 3GS Oil Circulation Test (43)

Cooling Mode - No Oil Injection

SLO 2/28/96

System Temperatures

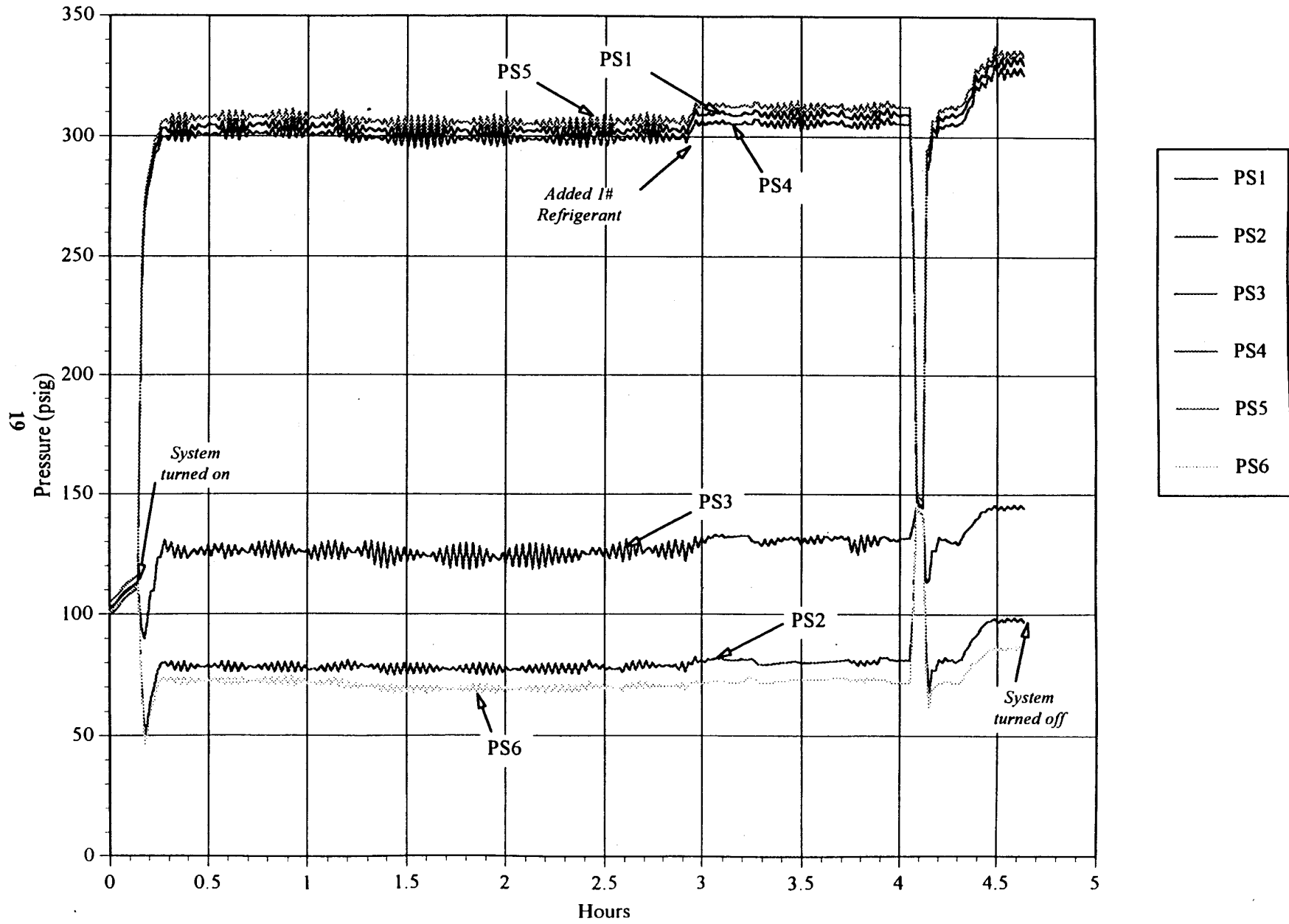


Heat Pump R407C-Suniso 3GS Oil Circulation Test (43)

Cooling Mode - No Oil Injection

SLO 2/28/96

System Pressures

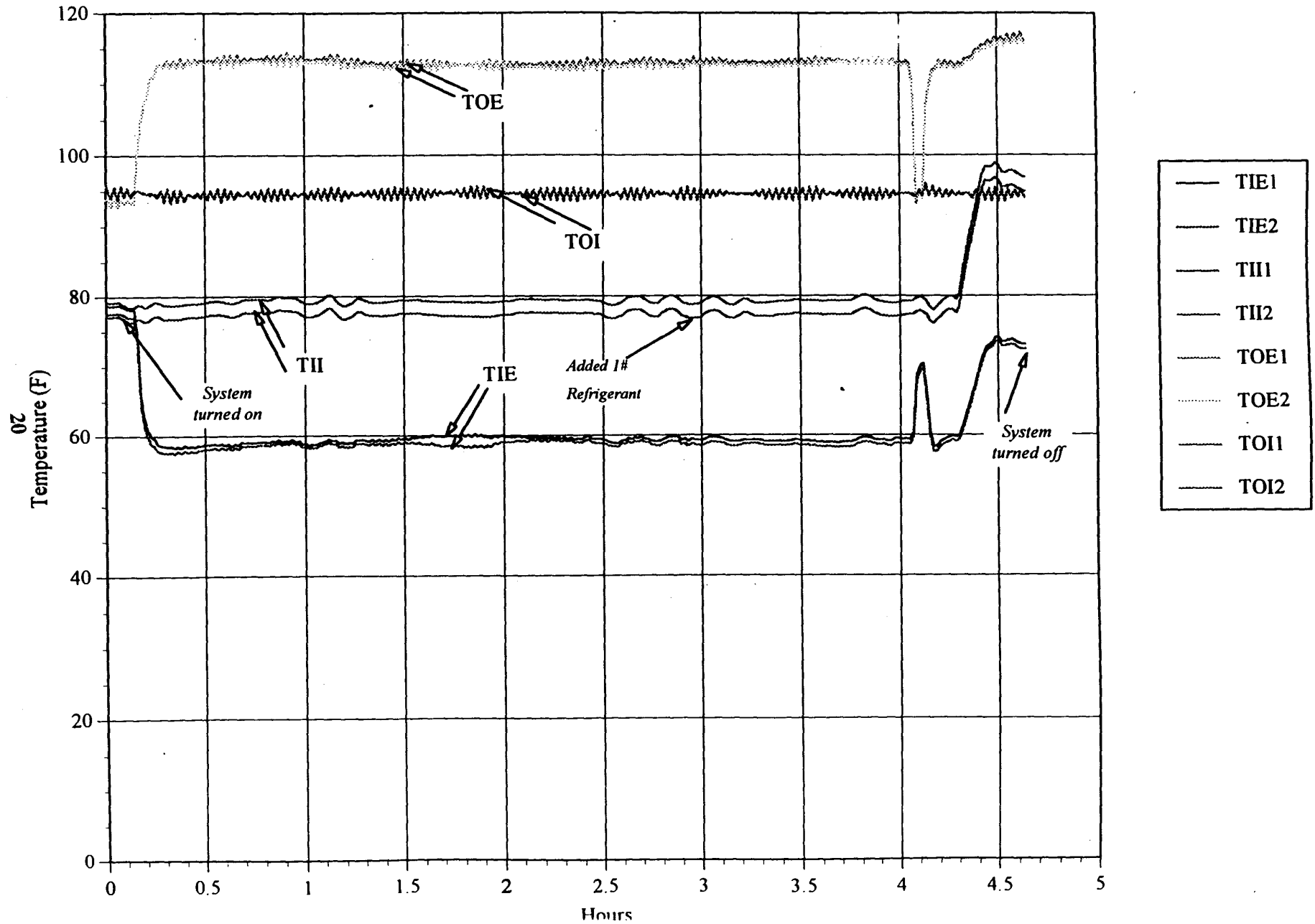


Heat Pump R407C-Suniso 3GS Oil Circulation Test (43)

SLO 2/28/96

Cooling Mode - No Oil Injection

Air Side Temperatures

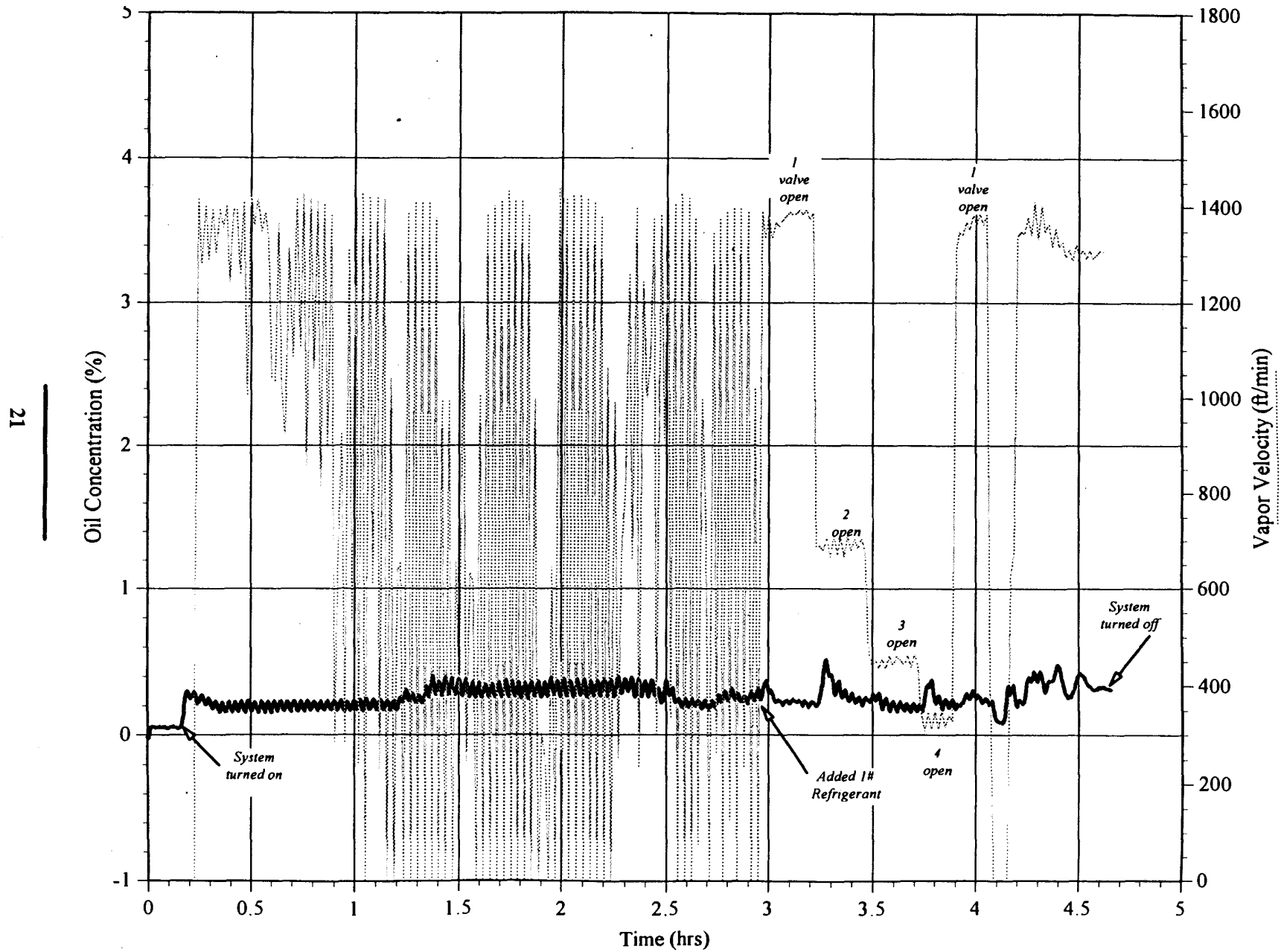


Heat Pump R407C-Suniso 3GS Oil Circulation Test (43)

Cooling Mode - No Oil Injection

SLO 2/28/96

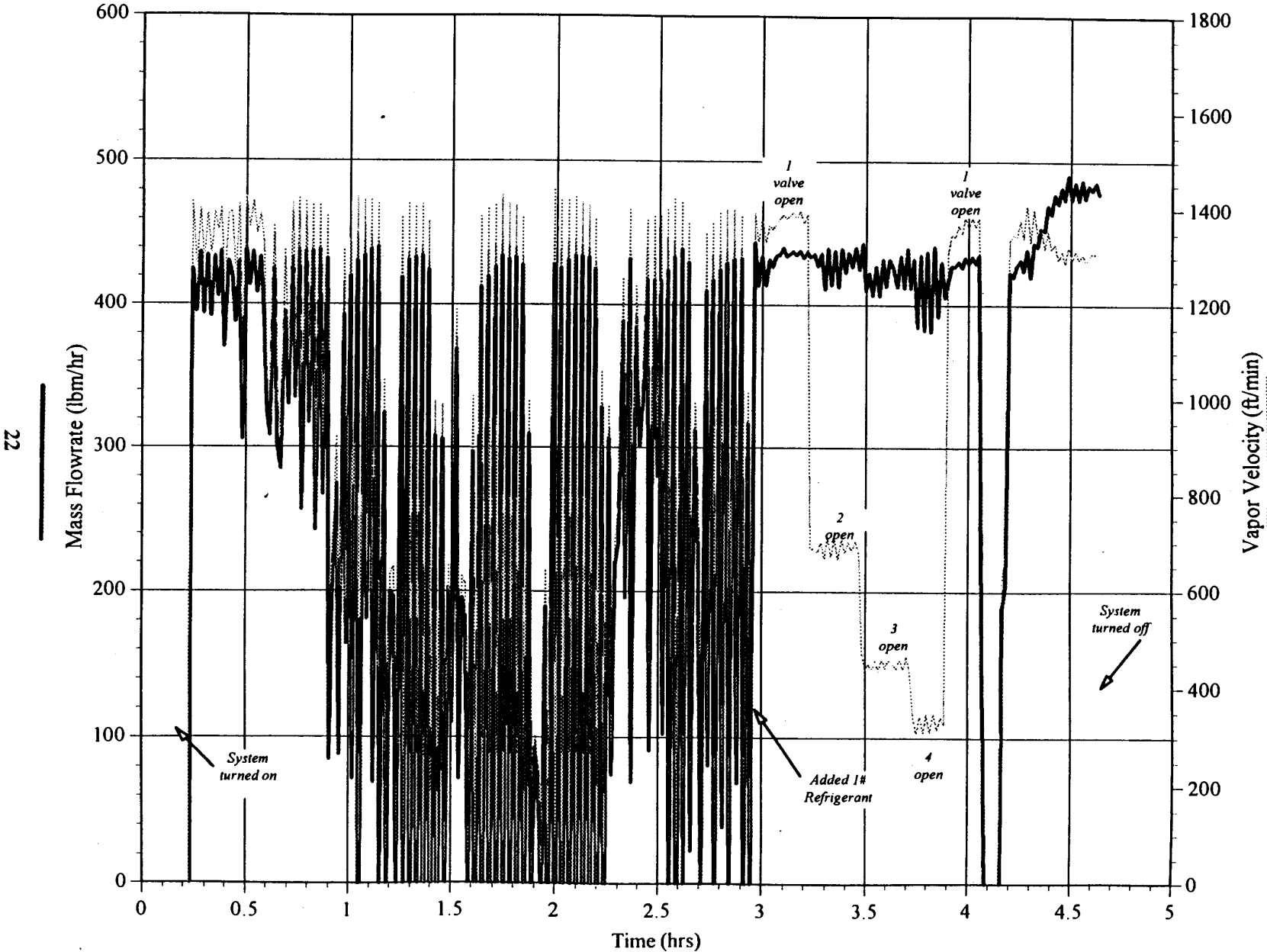
Oil Flows



Heat Pump R407C-Suniso 3GS Oil Circulation Test (43)

SLO 2/28/96

Cooling Mode - No Oil Injection

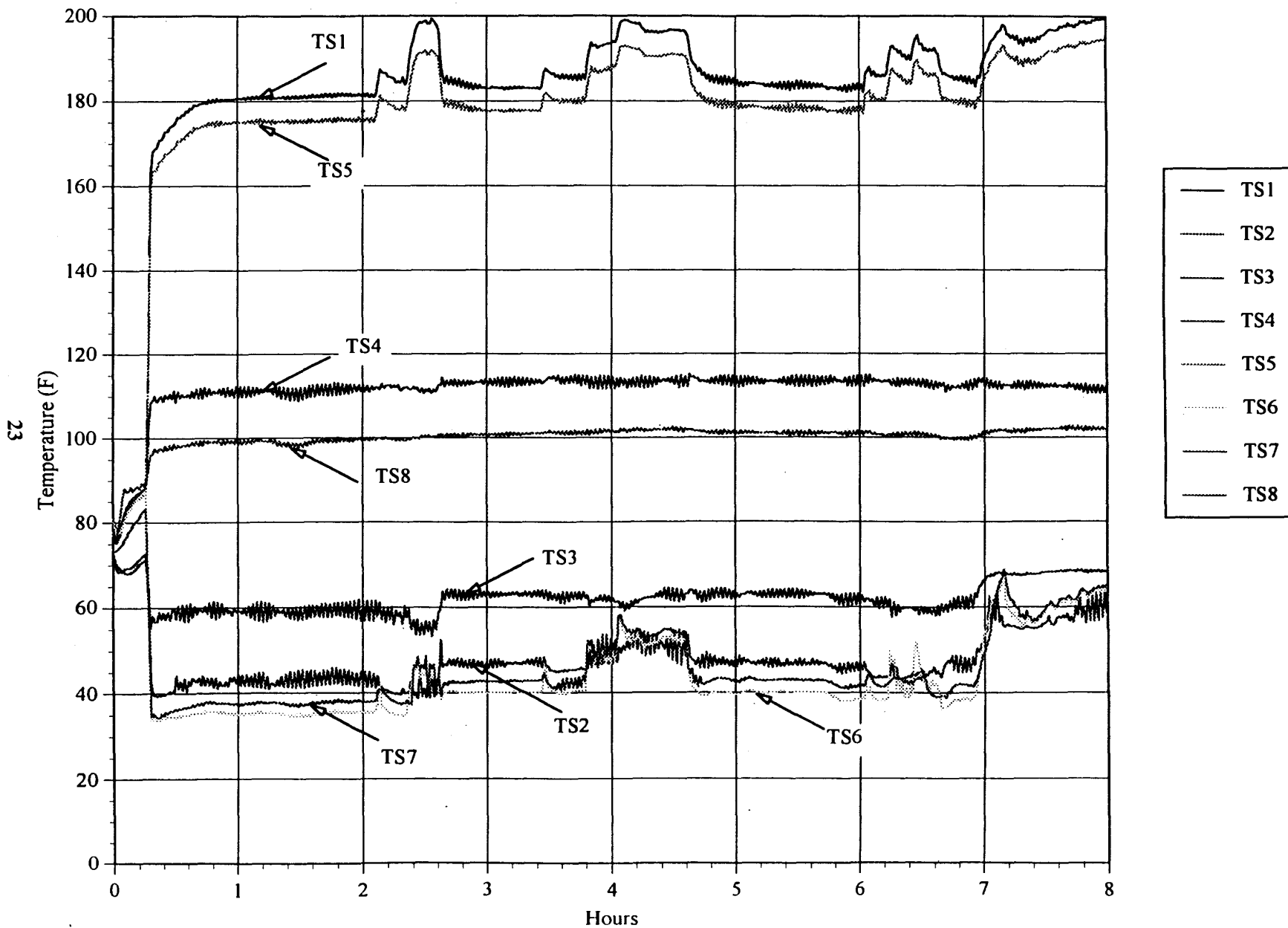


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (44&45)

Cooling Mode - No Oil Injection & Oil Injection

SLO 2/29/96

System Temperatures

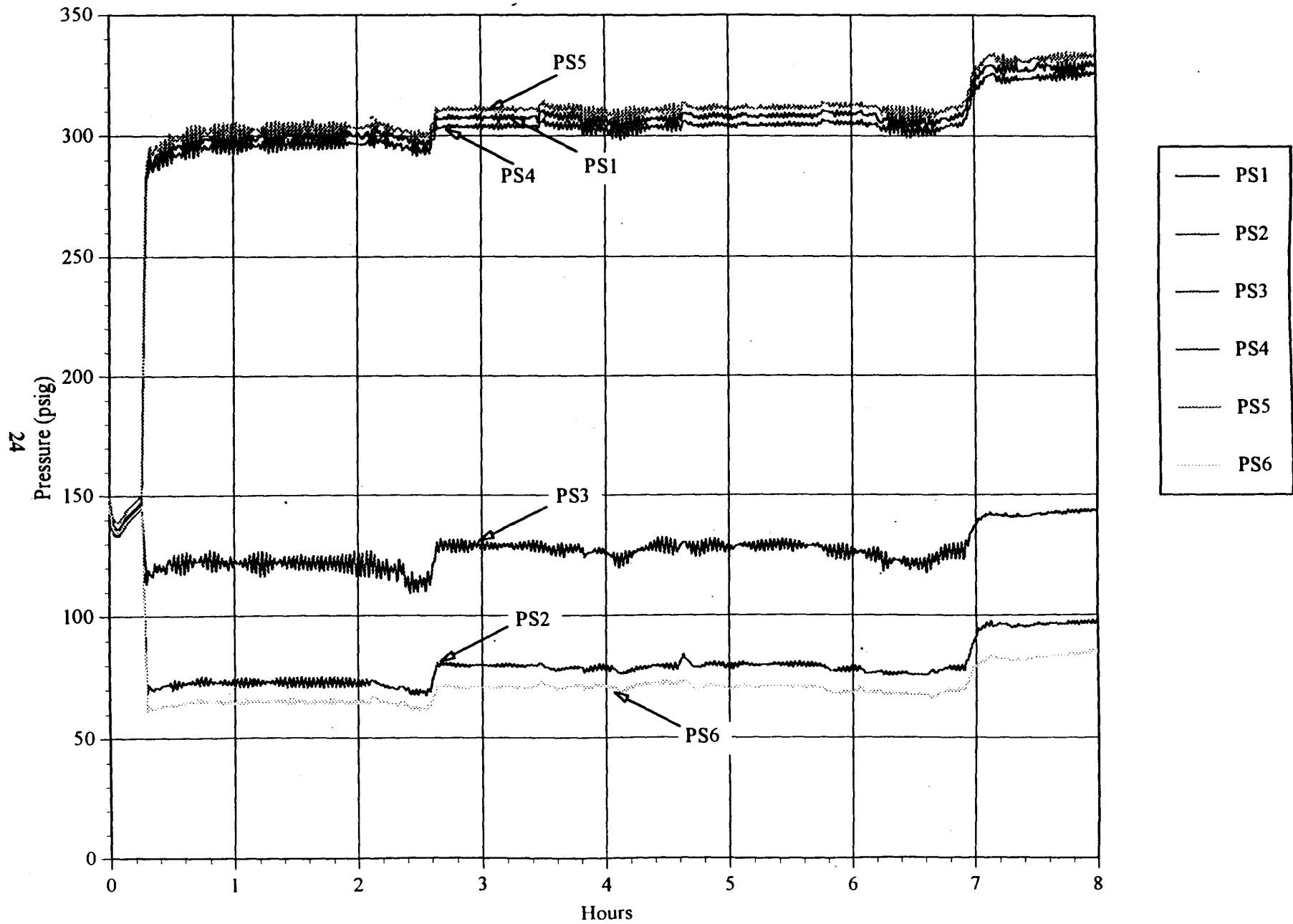


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (44&45)

Cooling Mode - No Oil Injection & Oil Injection

SLO 2/29/96

System Pressures

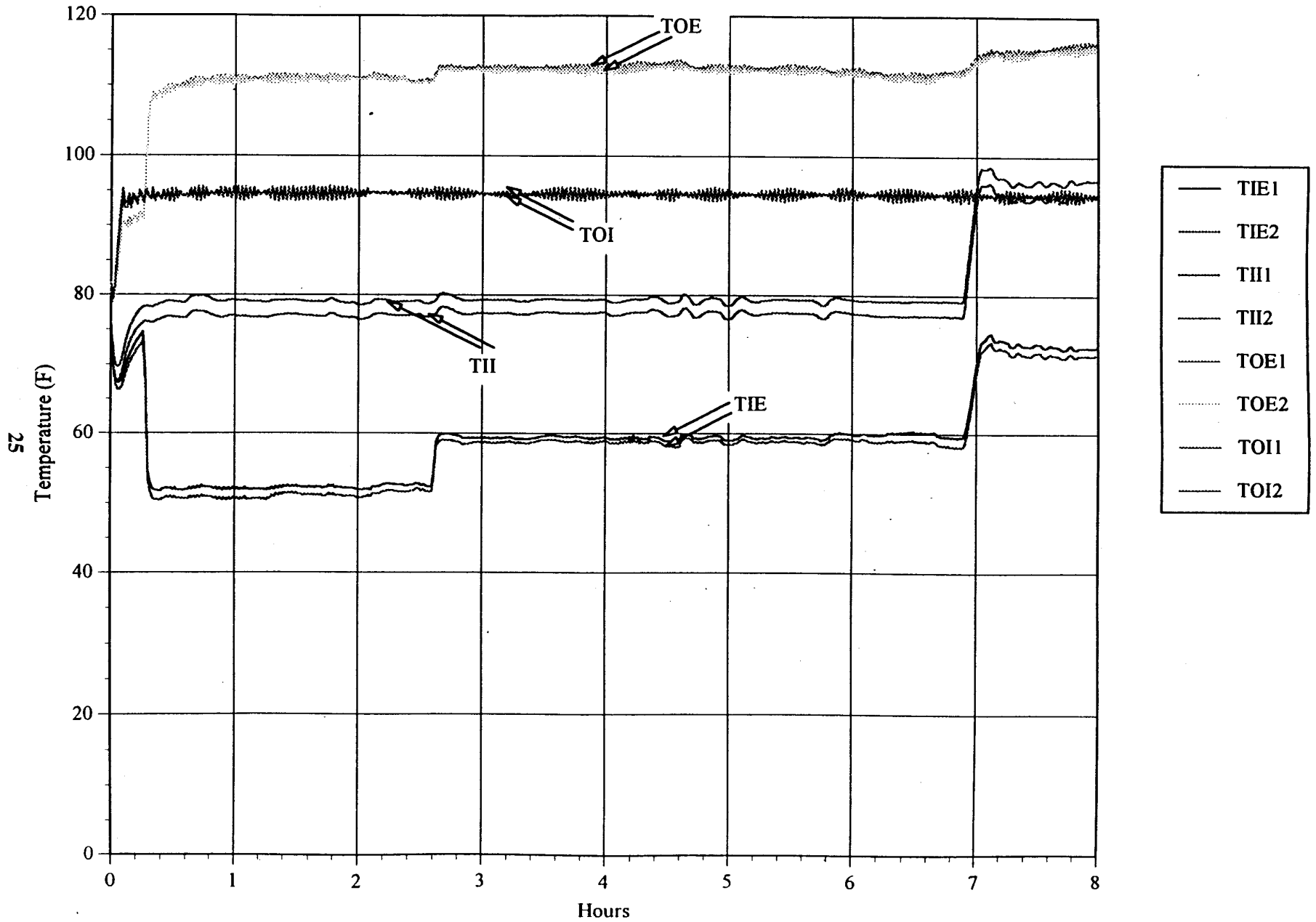


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (44&45)

Cooling Mode - No Oil Injection & Oil Injection

SLO 2/29/96

Air Side Temperatures

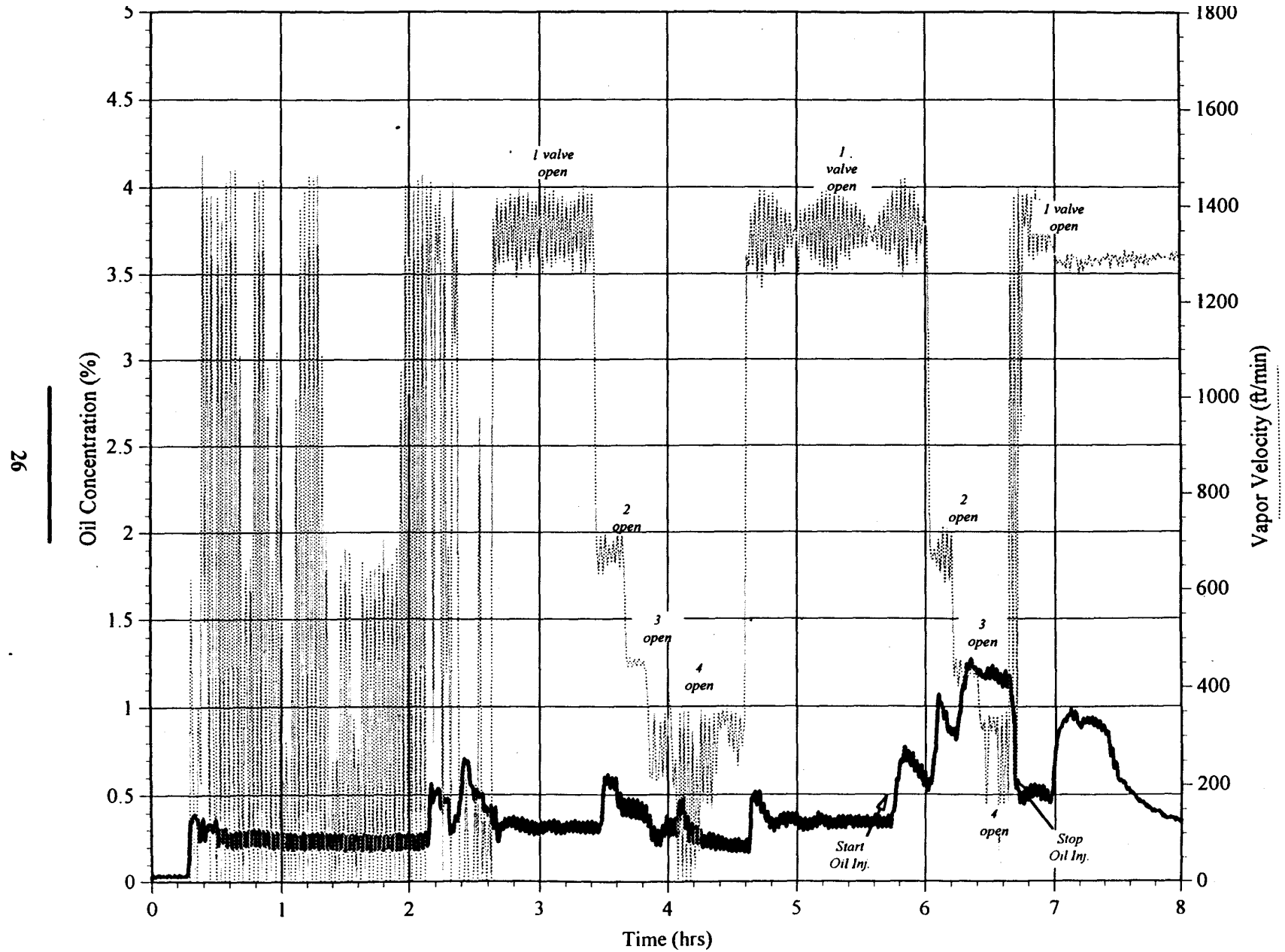


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (44&45)

SLO 2/29/96

Cooling Mode - No Oil Injection & Oil Injection

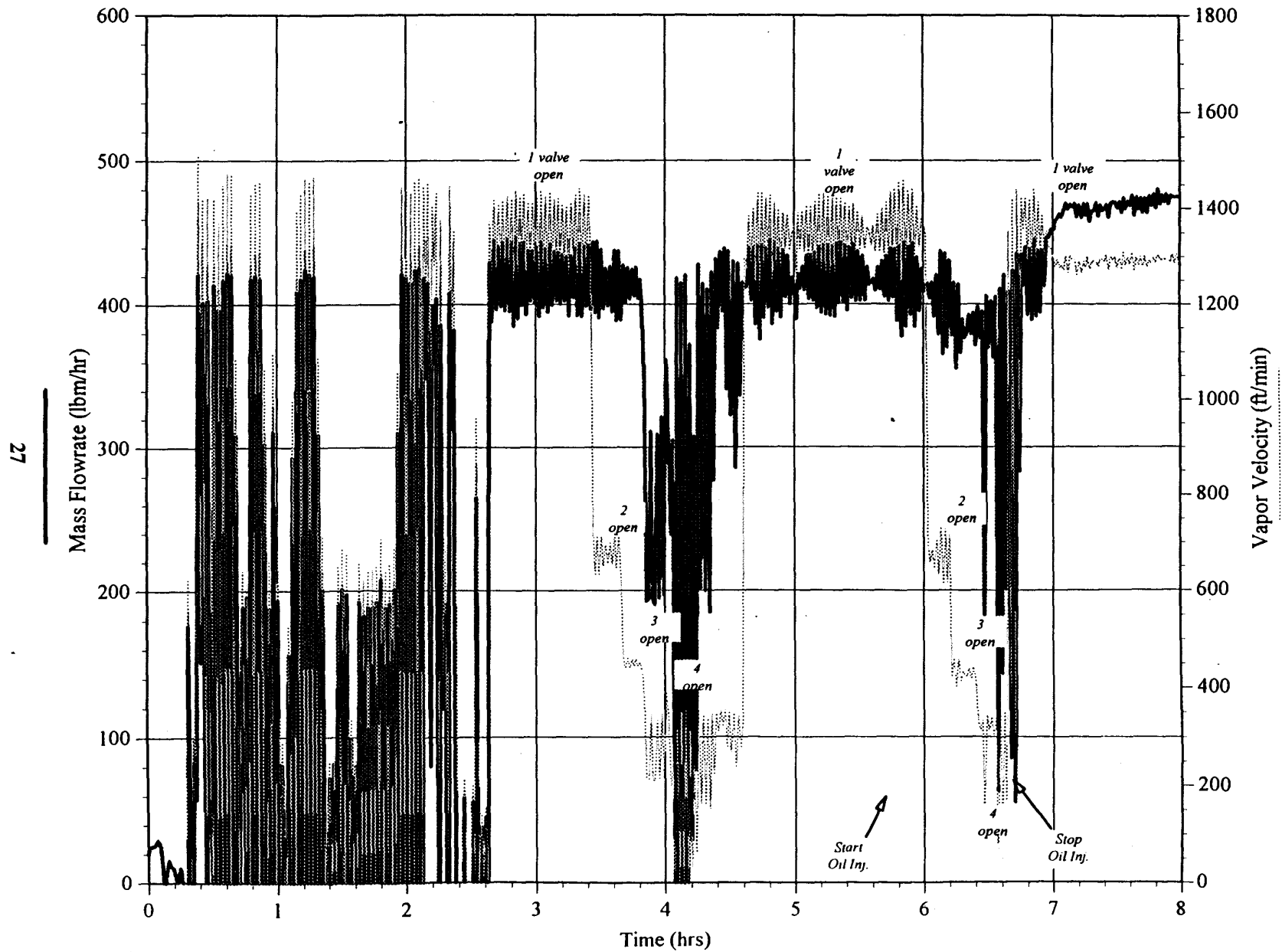
Oil Flows



Heat Pump R407C-Suniso 3GS Oil Circulation Tests (44&45)

SLO 2/29/96

Cooling Mode - No Oil Injection & Oil Injection

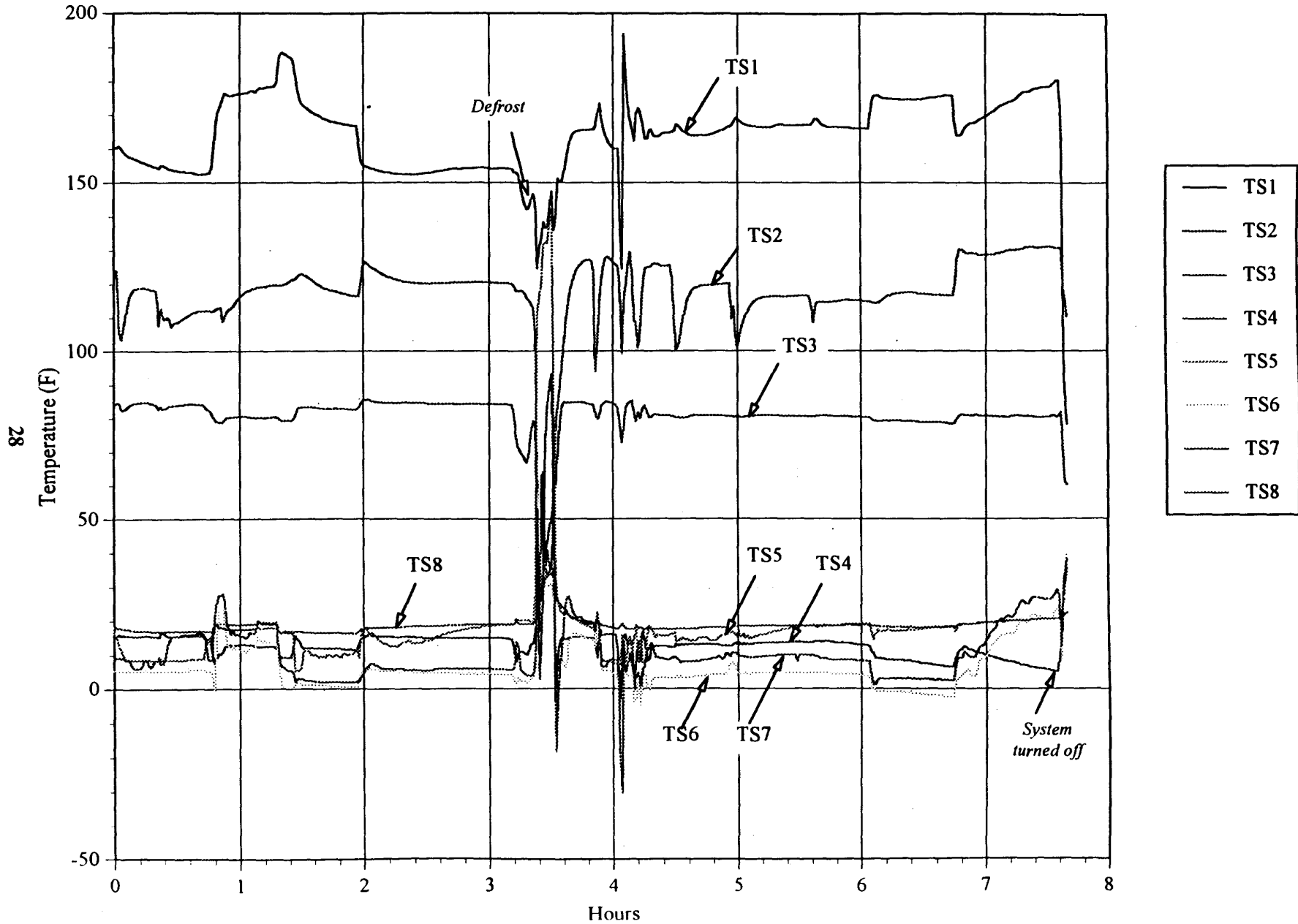


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (46&47)

SLO 2/29/96

Heating Mode - No Oil Injection

System Temperatures

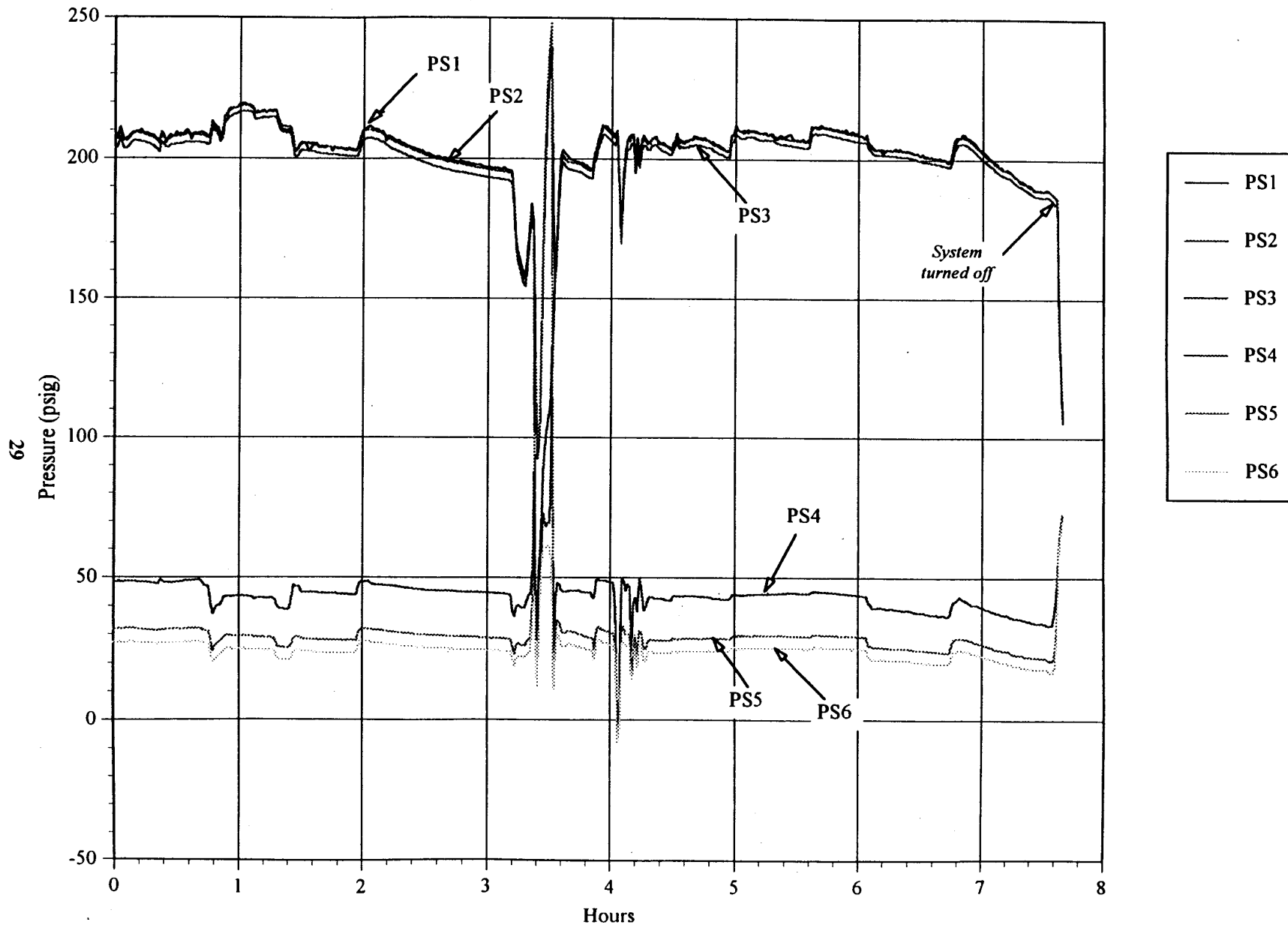


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (46&47)

SLO 2/29/96

Heating Mode - No Oil Injection

System Pressures

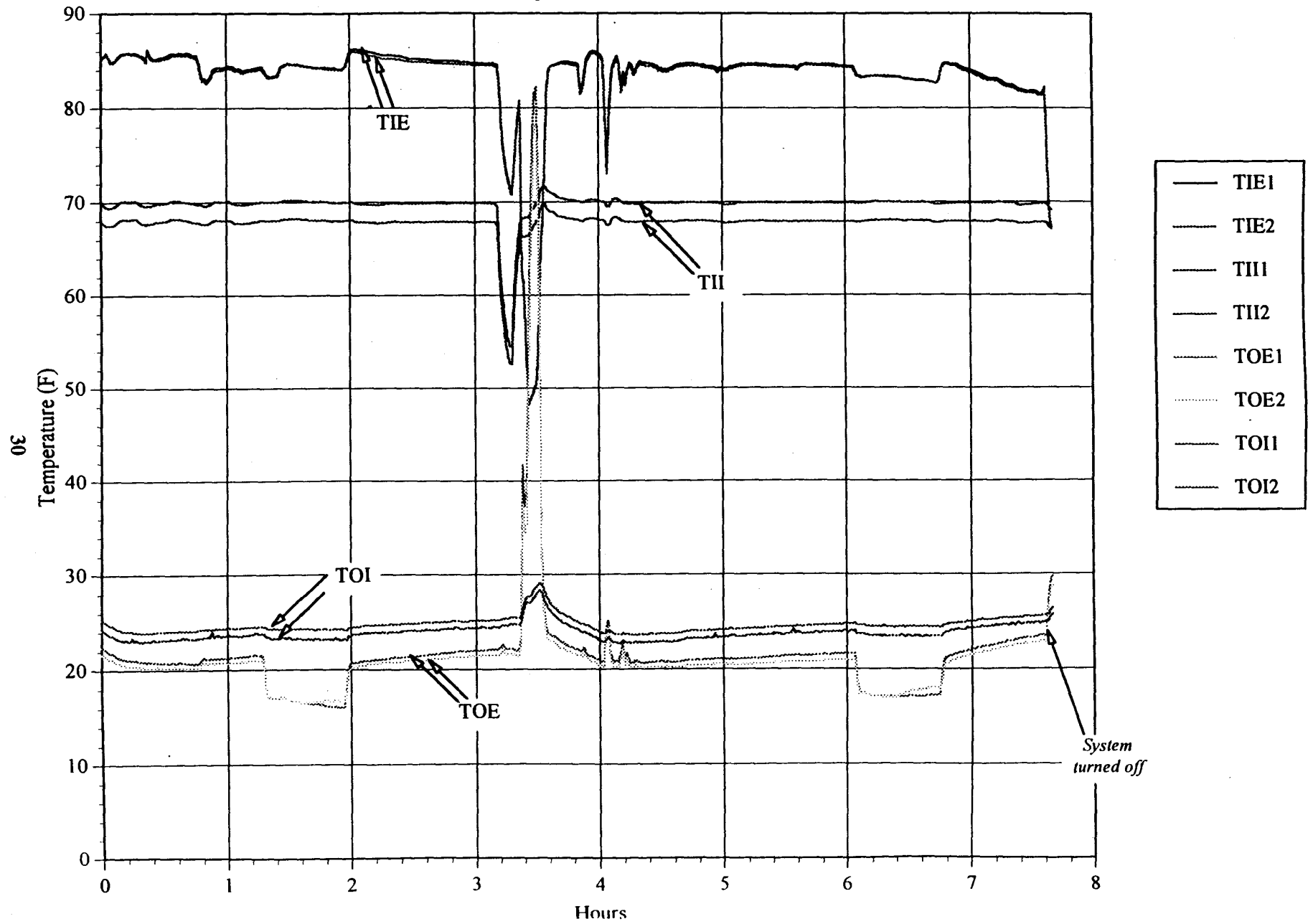


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (46&47)

SLO 2/29/96

Heating Mode - No Oil Injection

Air Side Temperatures

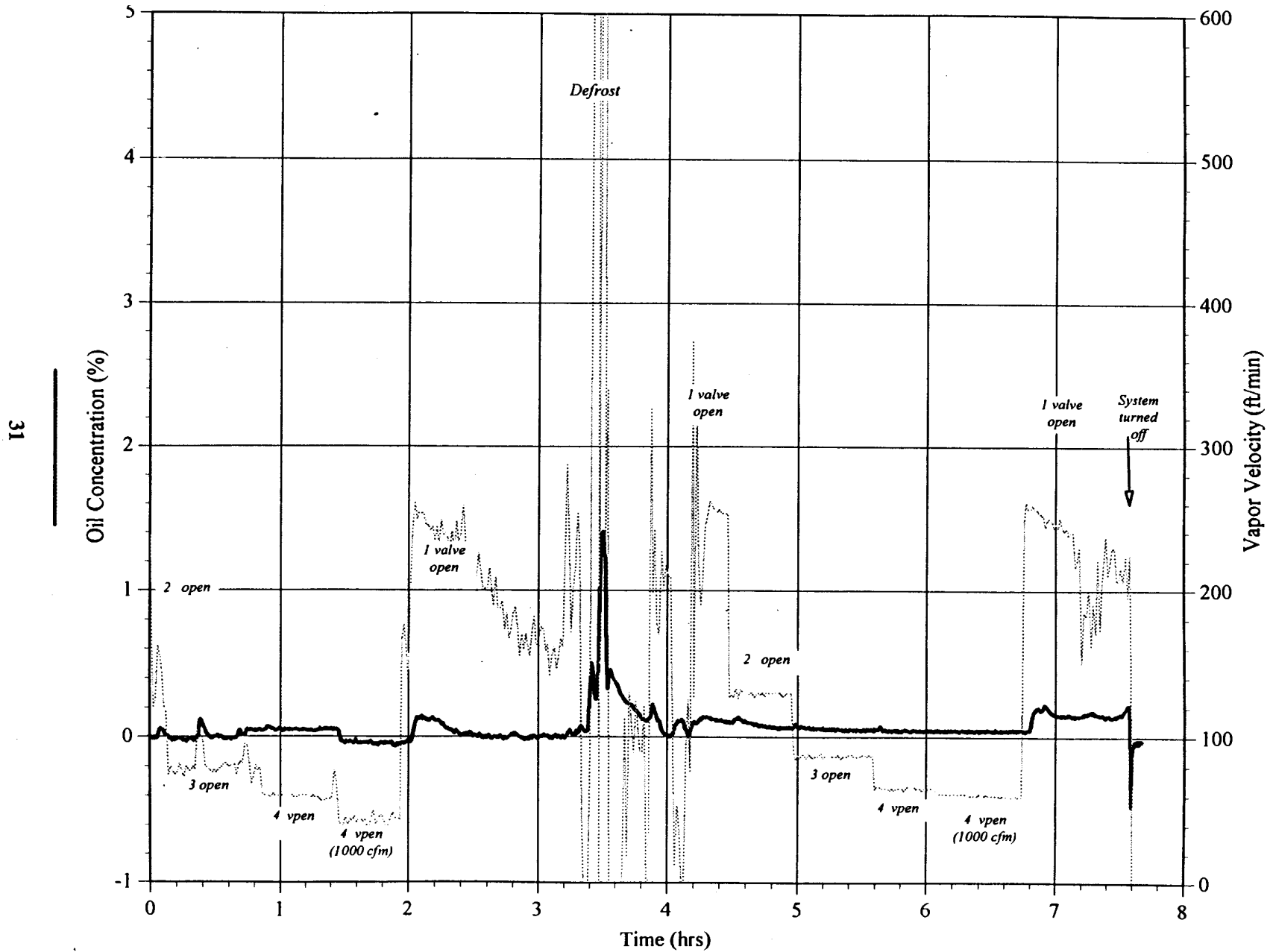


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (46&47)

SLO 2/29/96

Heating Mode - No Oil Injection

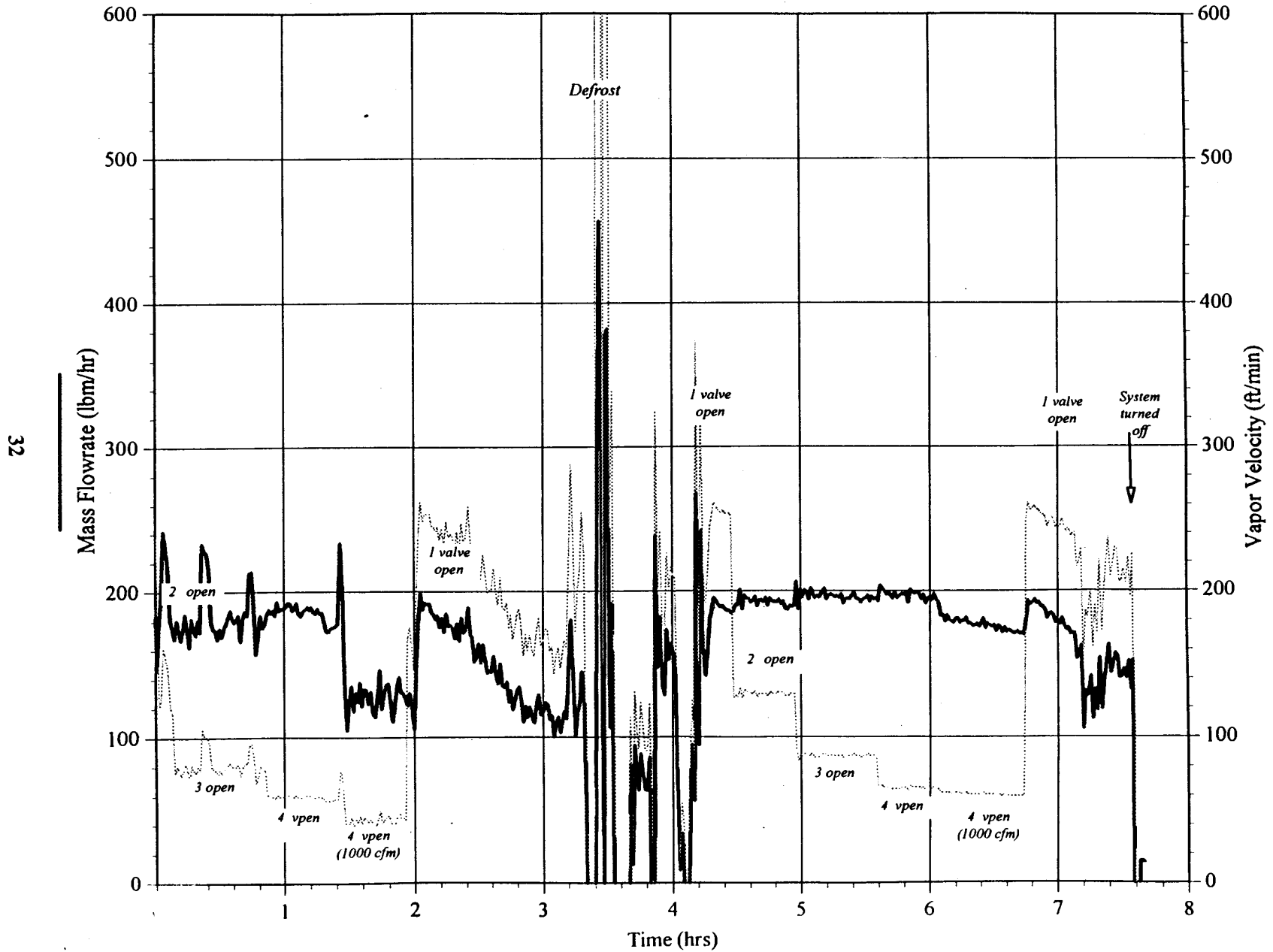
Oil Flows



Heat Pump R407C-Suniso 3GS Oil Circulation Tests (46&47)

SLO 2/29/96

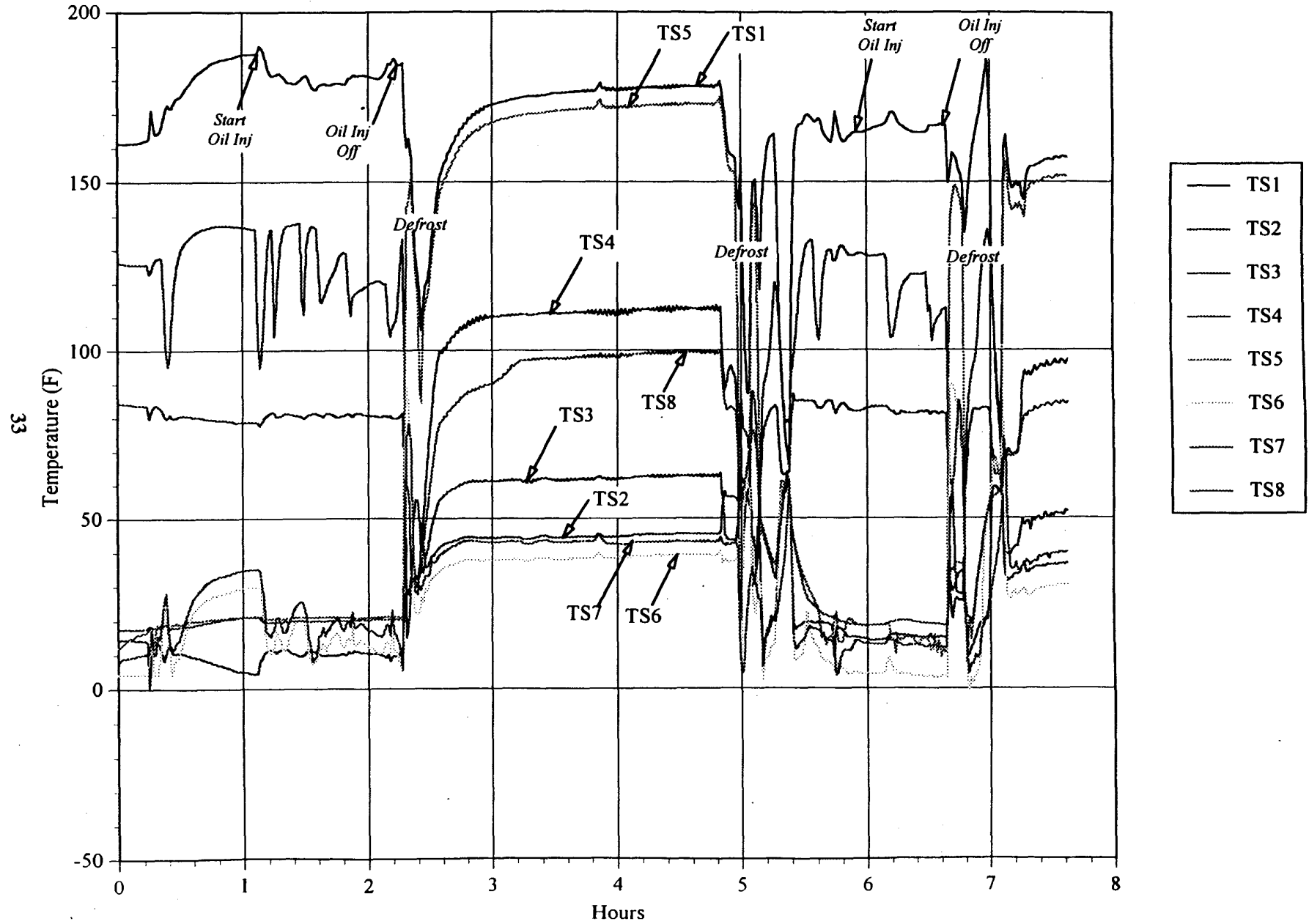
Heating Mode - No Oil Injection



Heat Pump R407C-Suniso 3GS Oil Circulation Tests (48&49)

Heating Mode - Oil Injection

System Temperatures

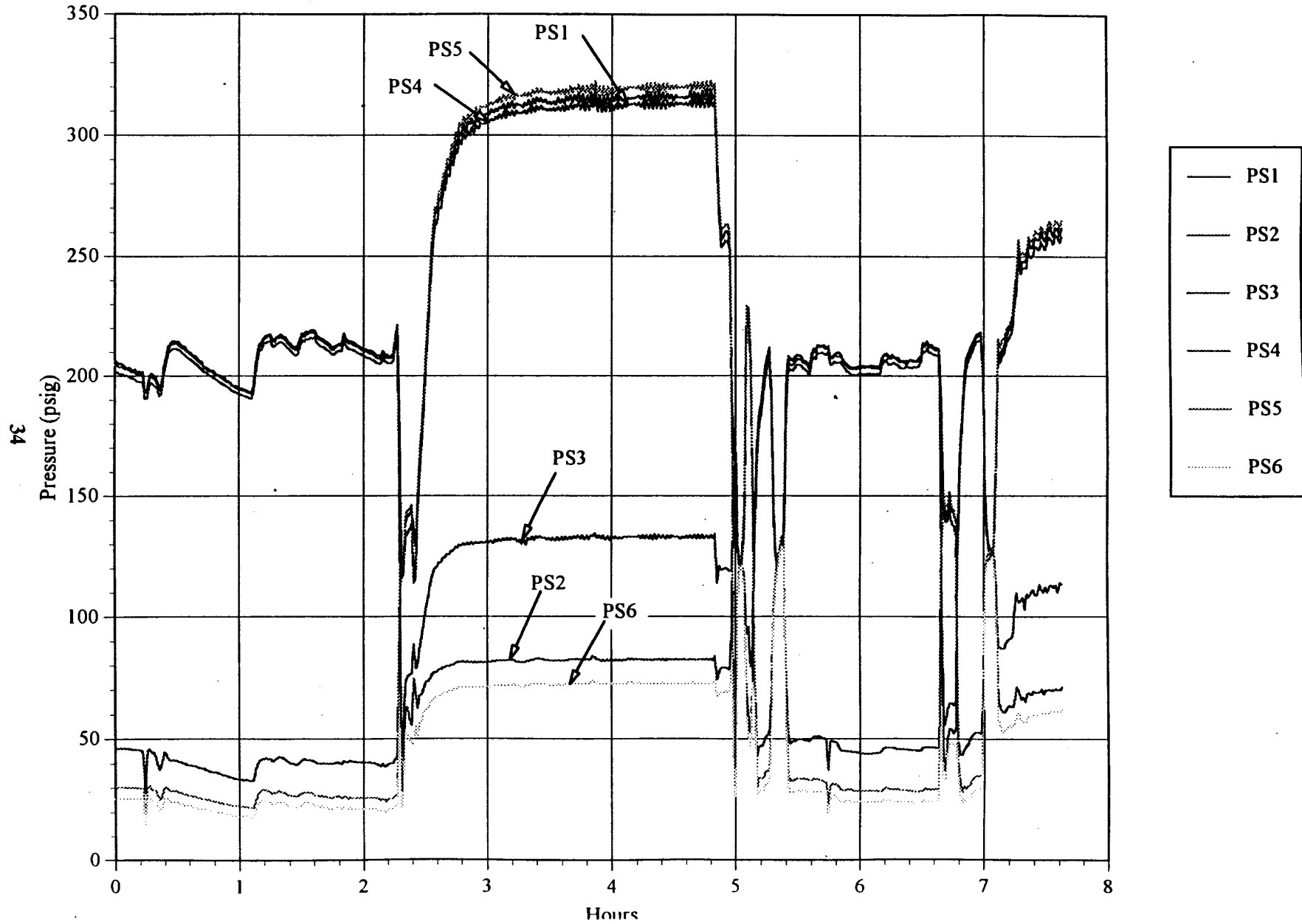


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (48&49)

SLO 2/29/96

Heating Mode - Oil Injection

System Pressures

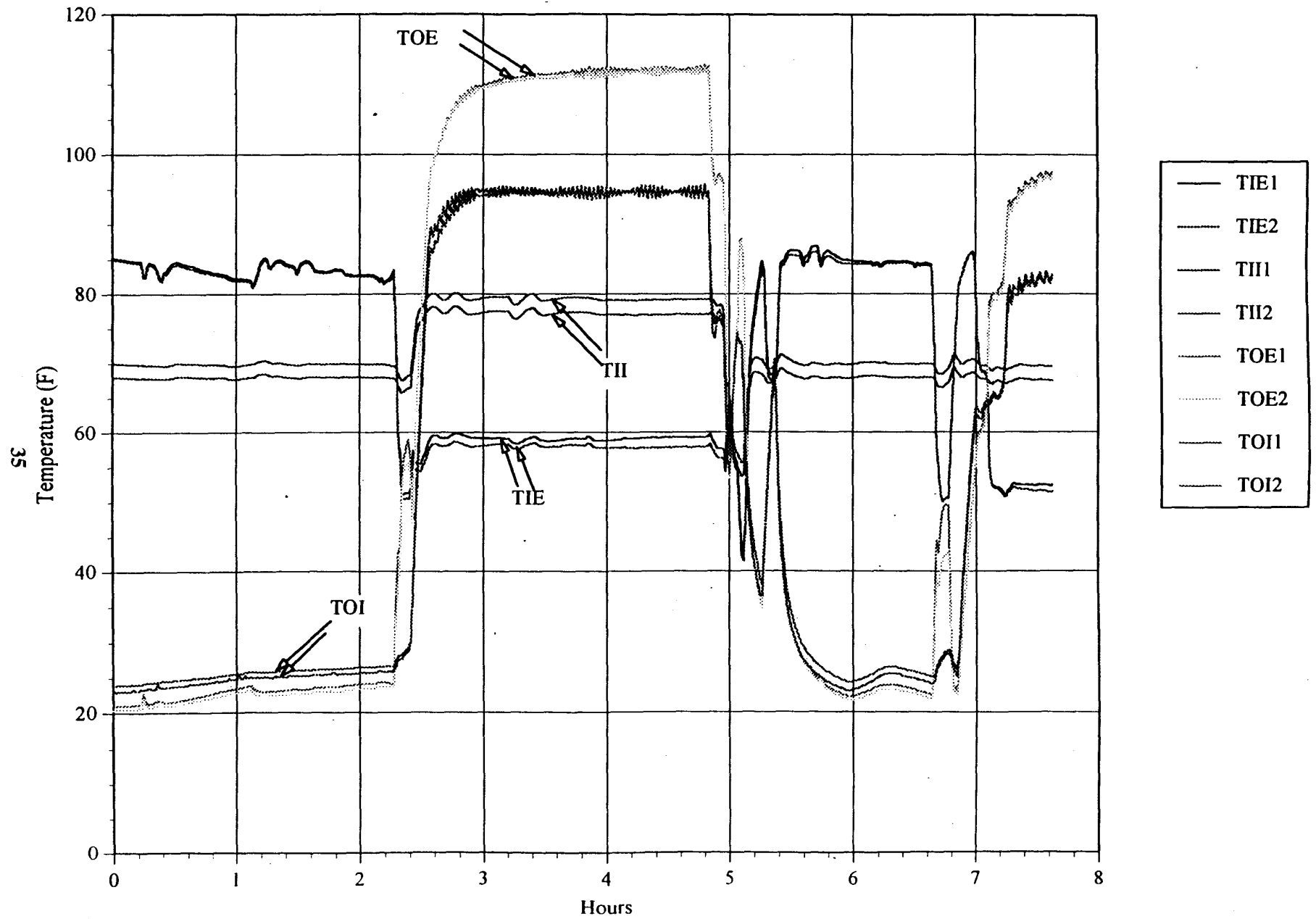


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (48&49)

SLO 2/29/96

Heating Mode - Oil Injection

Air Side Temperatures

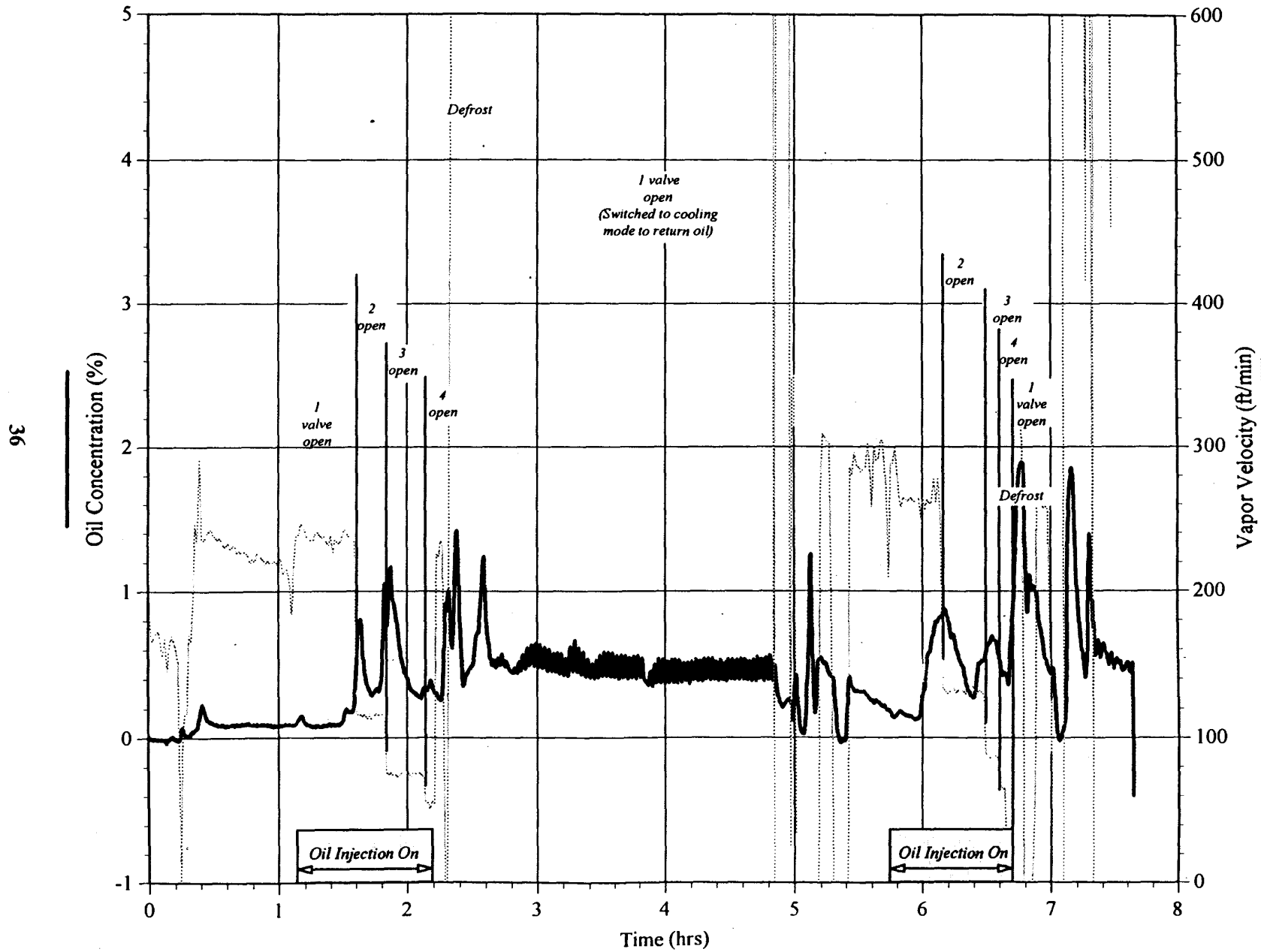


Heat Pump R407C-Suniso 3GS Oil Circulation Tests (48&49)

Heating Mode - Oil Injection

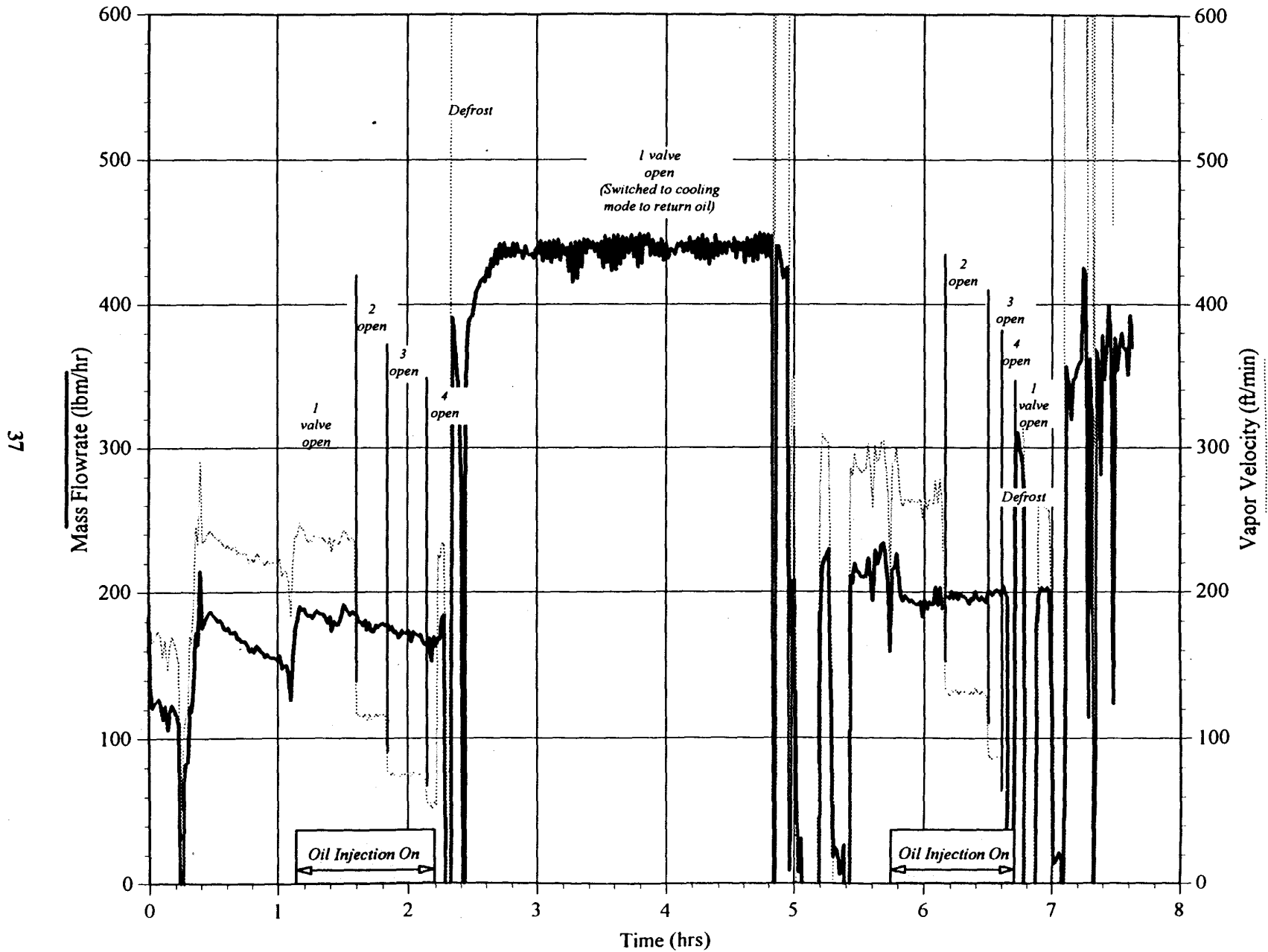
SLO 2/29/96

Oil Flows



Heat Pump R407C-Suniso 3GS Oil Circulation Tests (48&49) SLO 2/29/96

Heating Mode - Oil Injection



Refrigerant/Lubricant Test Series

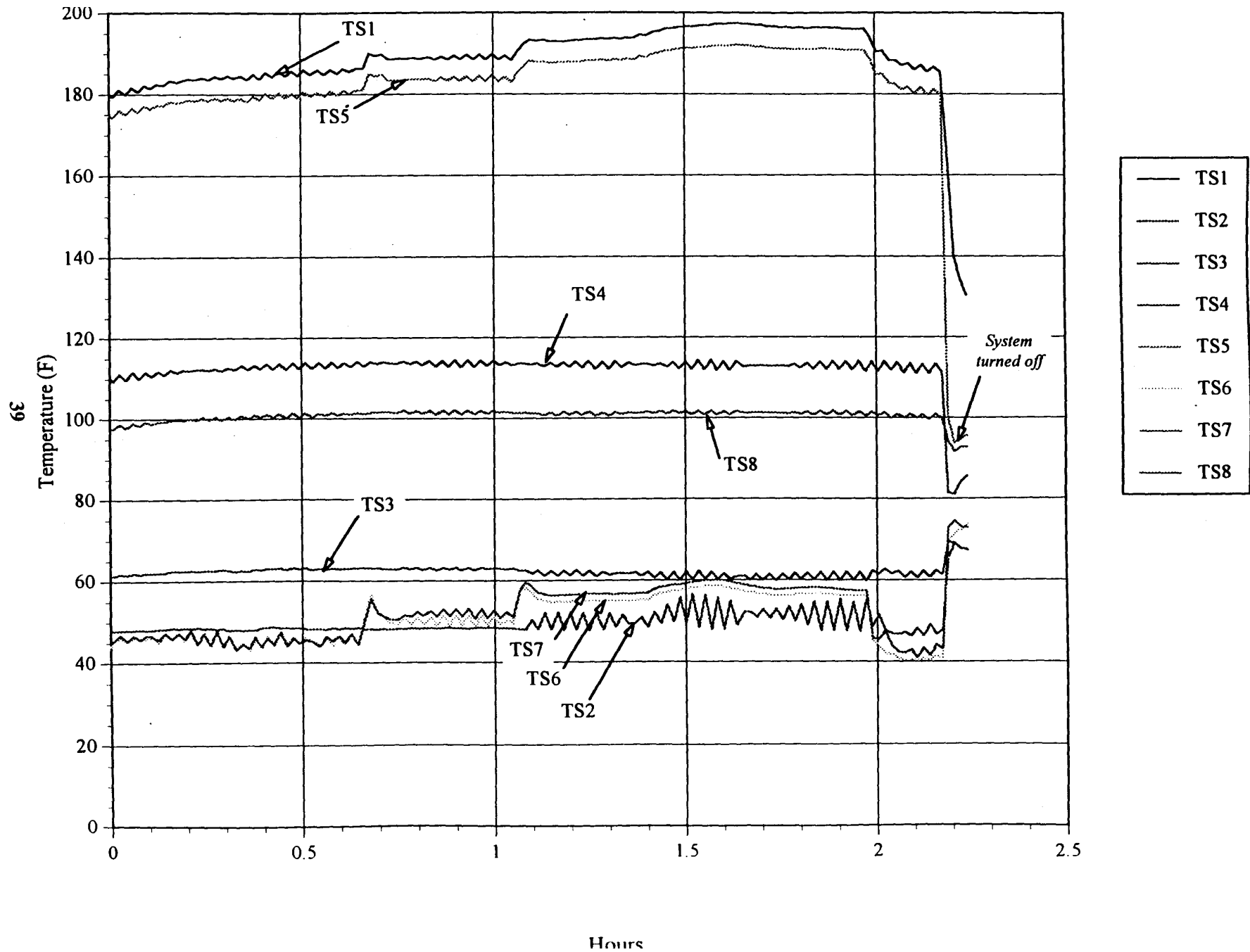
R407C - Suniso 1GS

Heat Pump R407C-Suniso 1GS Oil Circulation Test (50)

Cooling Mode - No Oil Injection

SLO 3/11/96

System Temperatures

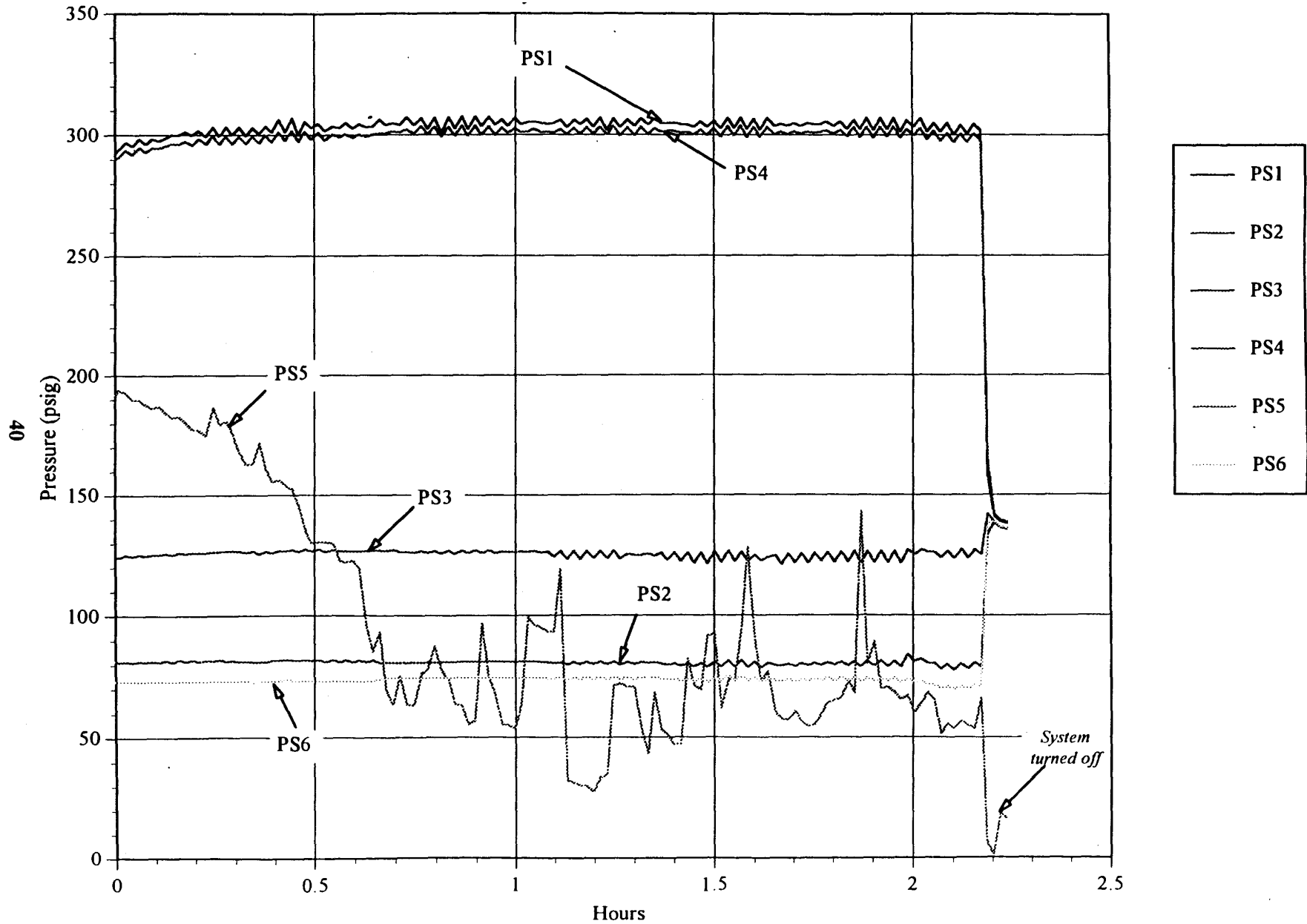


Heat Pump R407C-Suniso 1GS Oil Circulation Test (50)

Cooling Mode - No Oil Injection

SLO 3/11/96

System Pressures

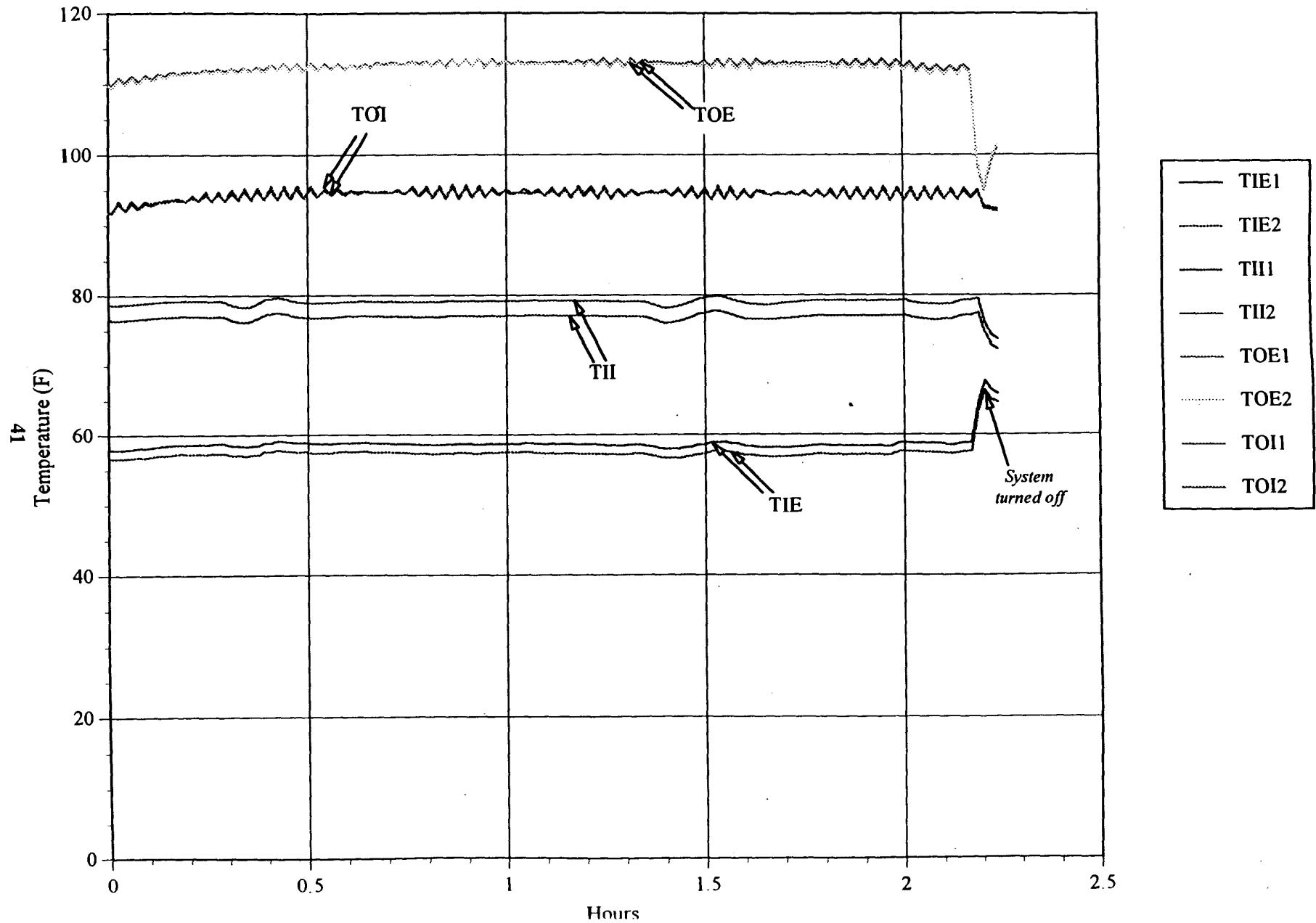


Heat Pump R407C-Suniso 1GS Oil Circulation Test (50)

Cooling Mode - No Oil Injection

SLO 3/11/96

Air Side Temperatures



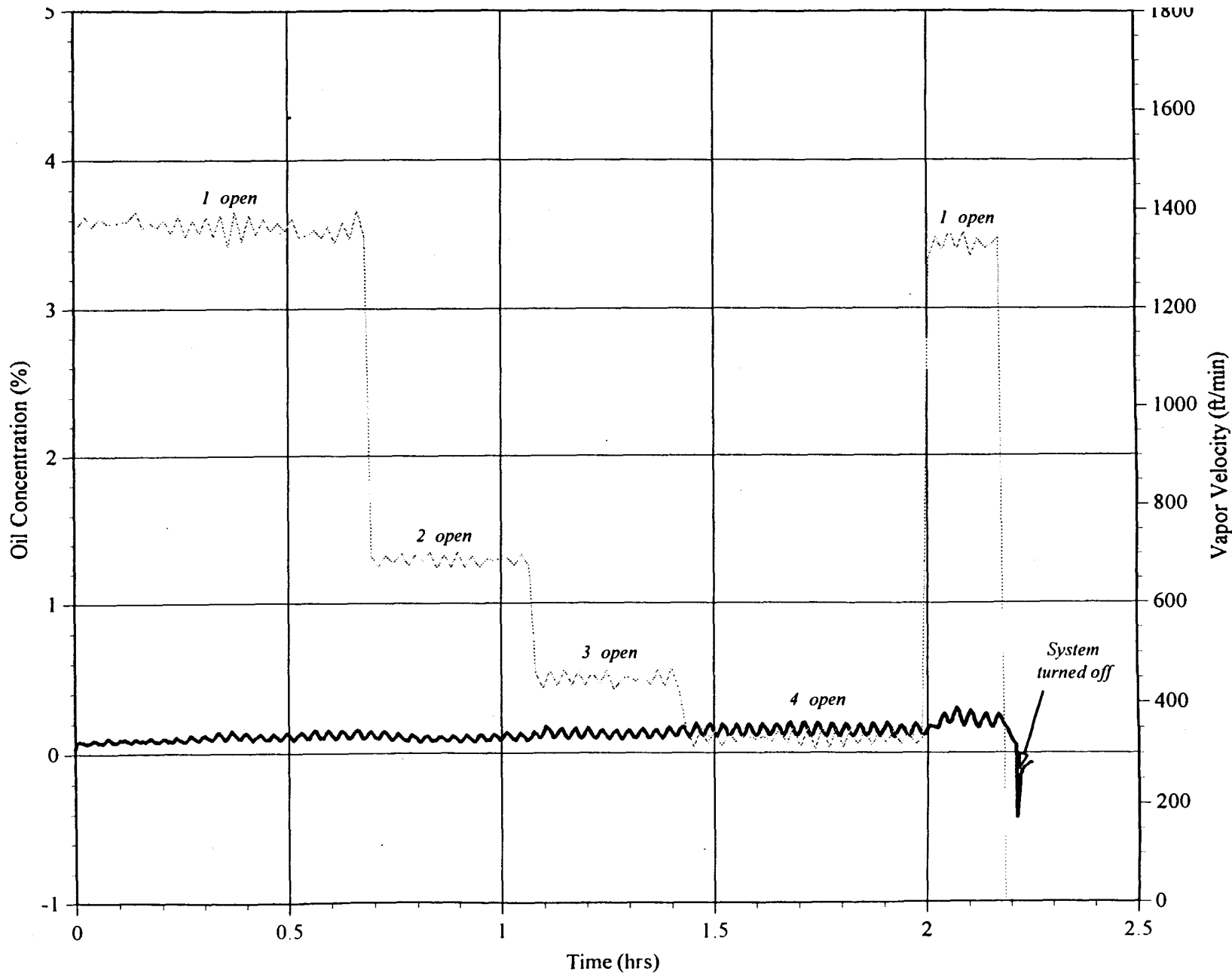
Heat Pump R407GSuniso 1GS Oil Circulation Test (50)

Cooling Mode - No Oil Injection

SLO 3/11/96

Oil Flows

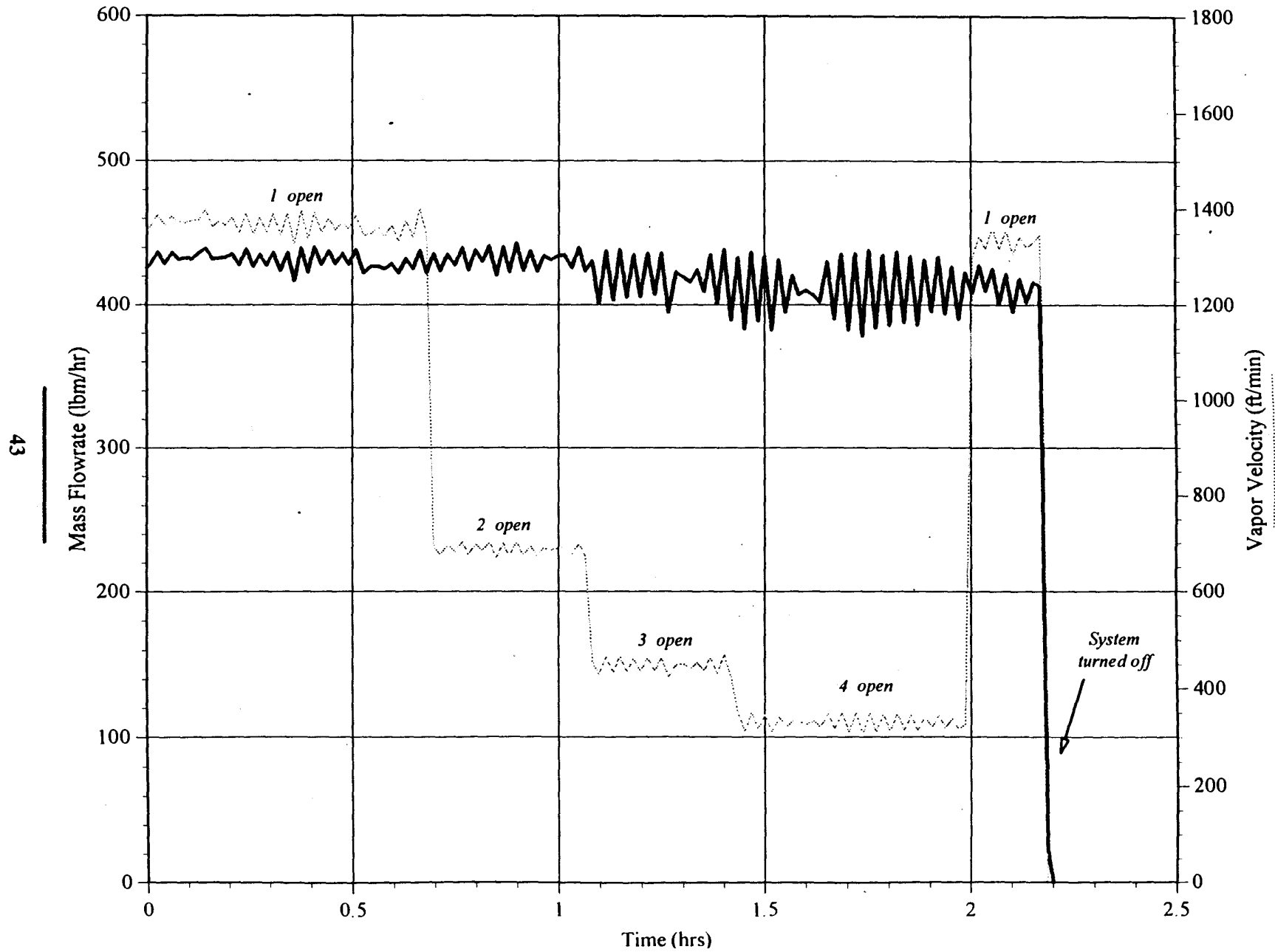
42



Heat Pump R407C-Suniso 1GS Oil Circulation Test (50)

Cooling Mode - No Oil Injection

SLO 3/11/96

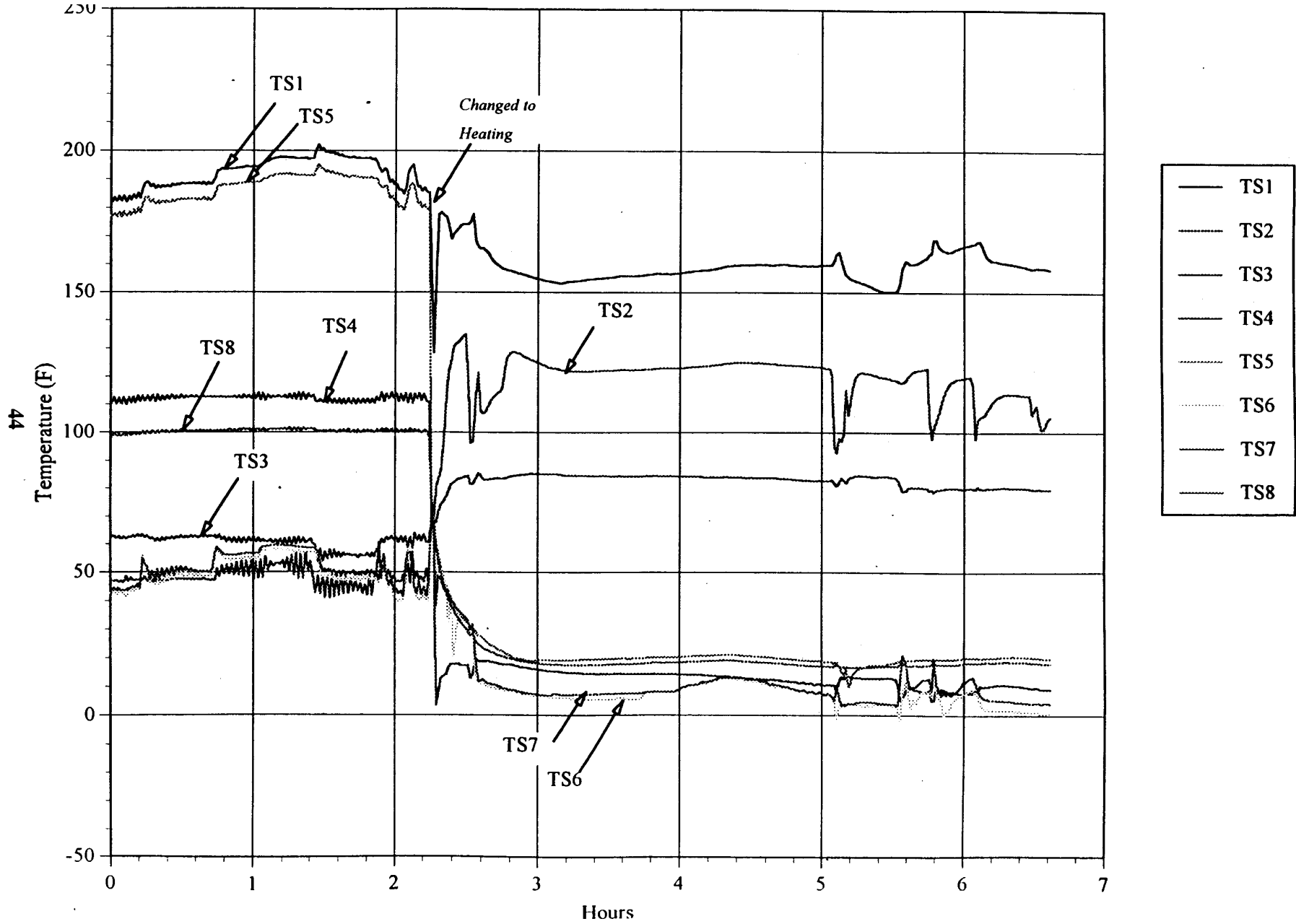


Heat Pump R407C-Suniso 1GS Oil Circulation Tests (51&52)

Cooling & Heating Mode - No Oil Injection

SLO 3/12/96

System Temperatures

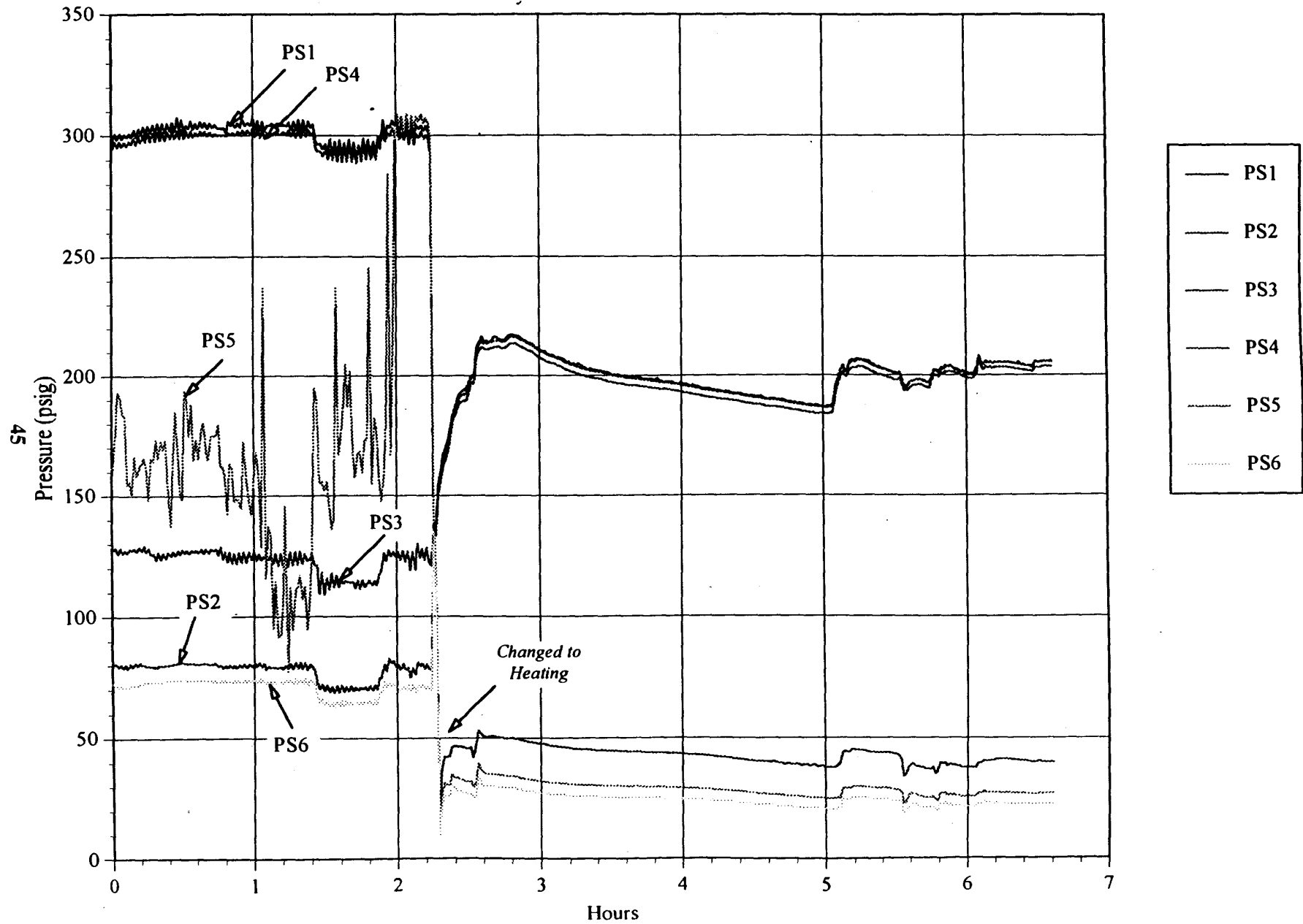


Heat Pump R407C-Suniso 1GS Oil Circulation Tests (51&52)

Cooling & Heating Mode - No Oil Injection

SLO 3/12/96

System Pressures

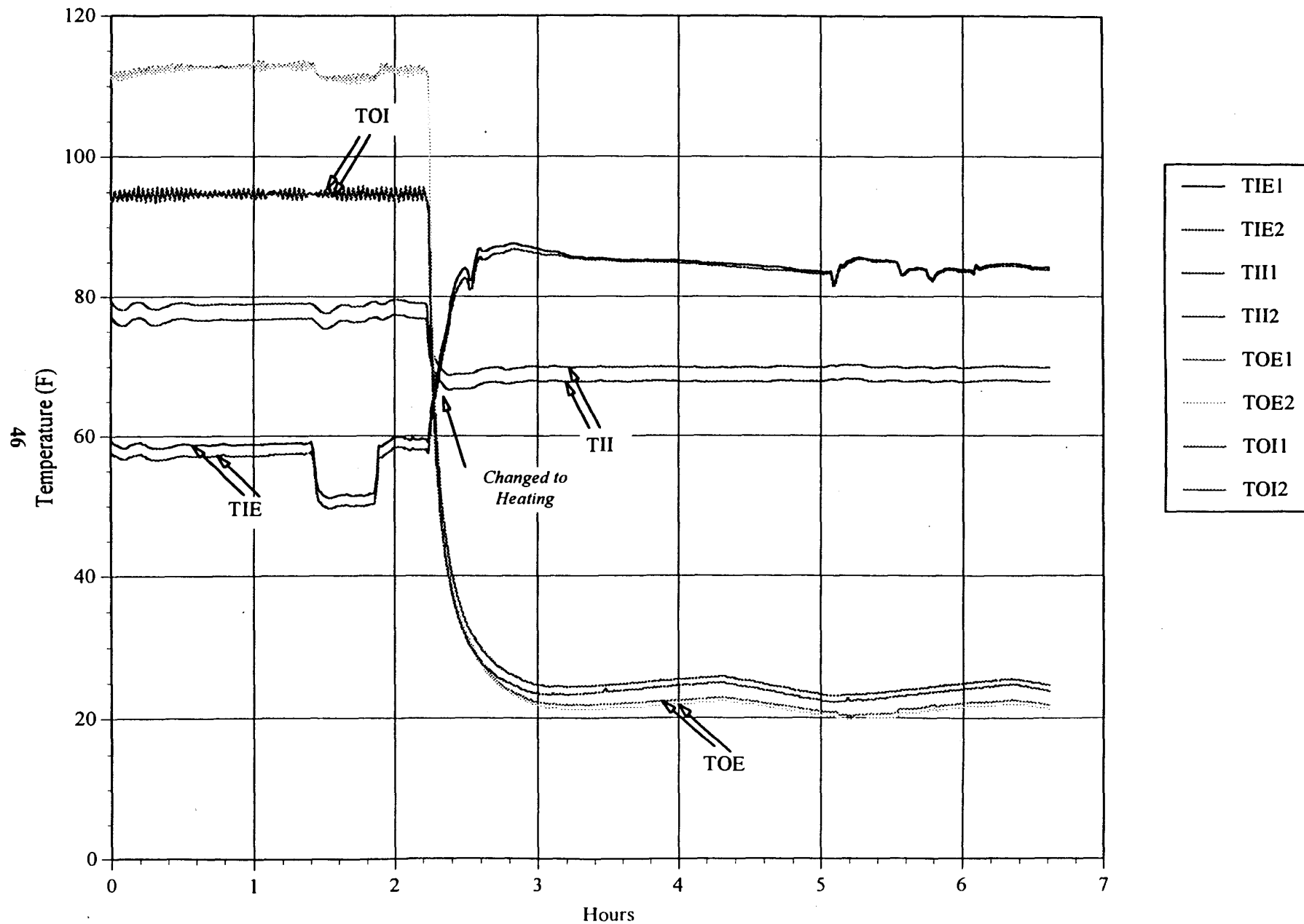


Heat Pump R407C-Suniso 1GS Oil Circulation Tests (51&52)

Cooling & Heating Mode - No Oil Injection

SLO 3/12/96

Air Side Temperatures

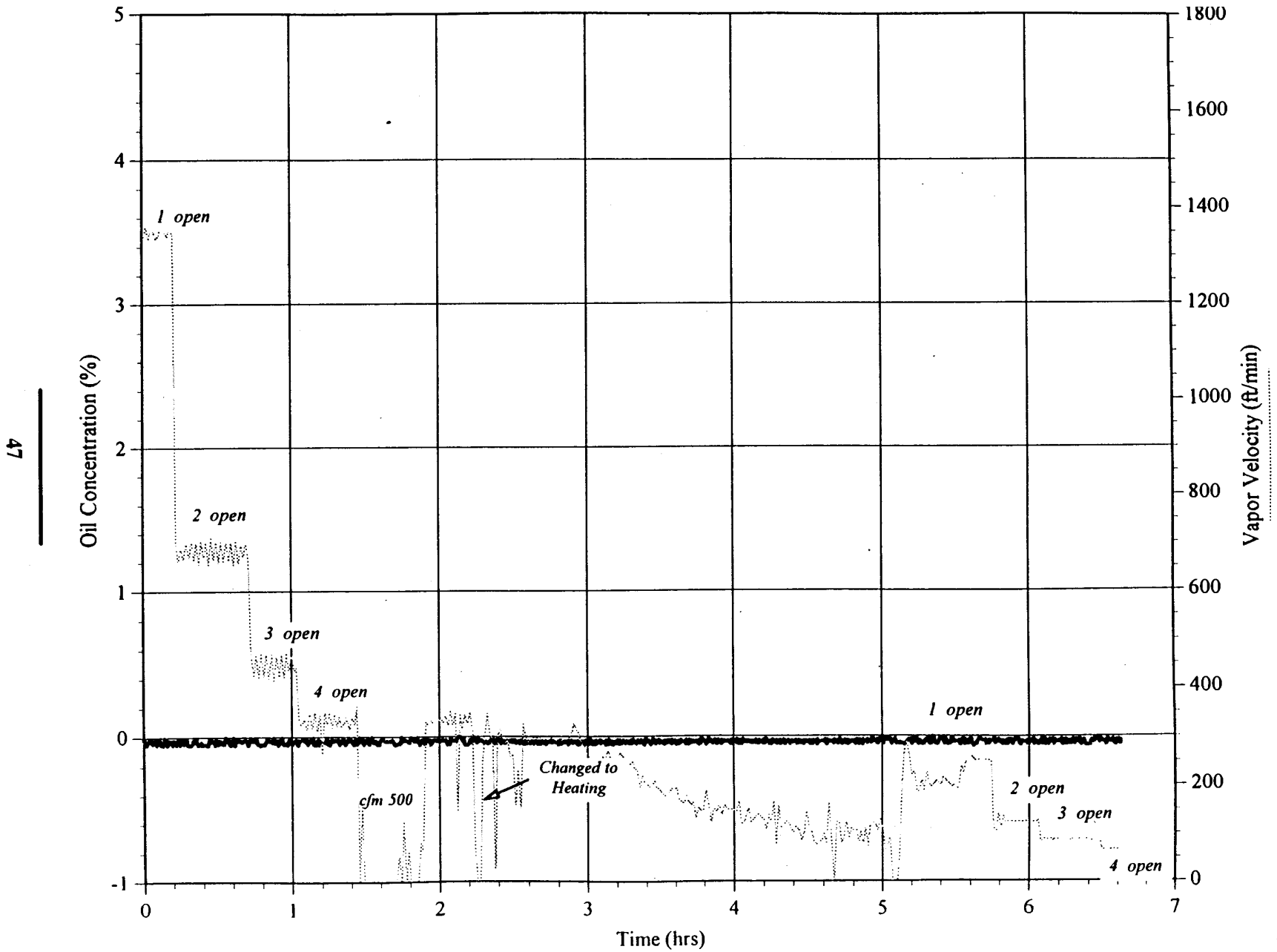


Heat Pump R407C-Suniso 1GS Oil Circulation Tests (51&52)

Cooling & Heating Mode - No Oil Injection

SLO 3/12/96

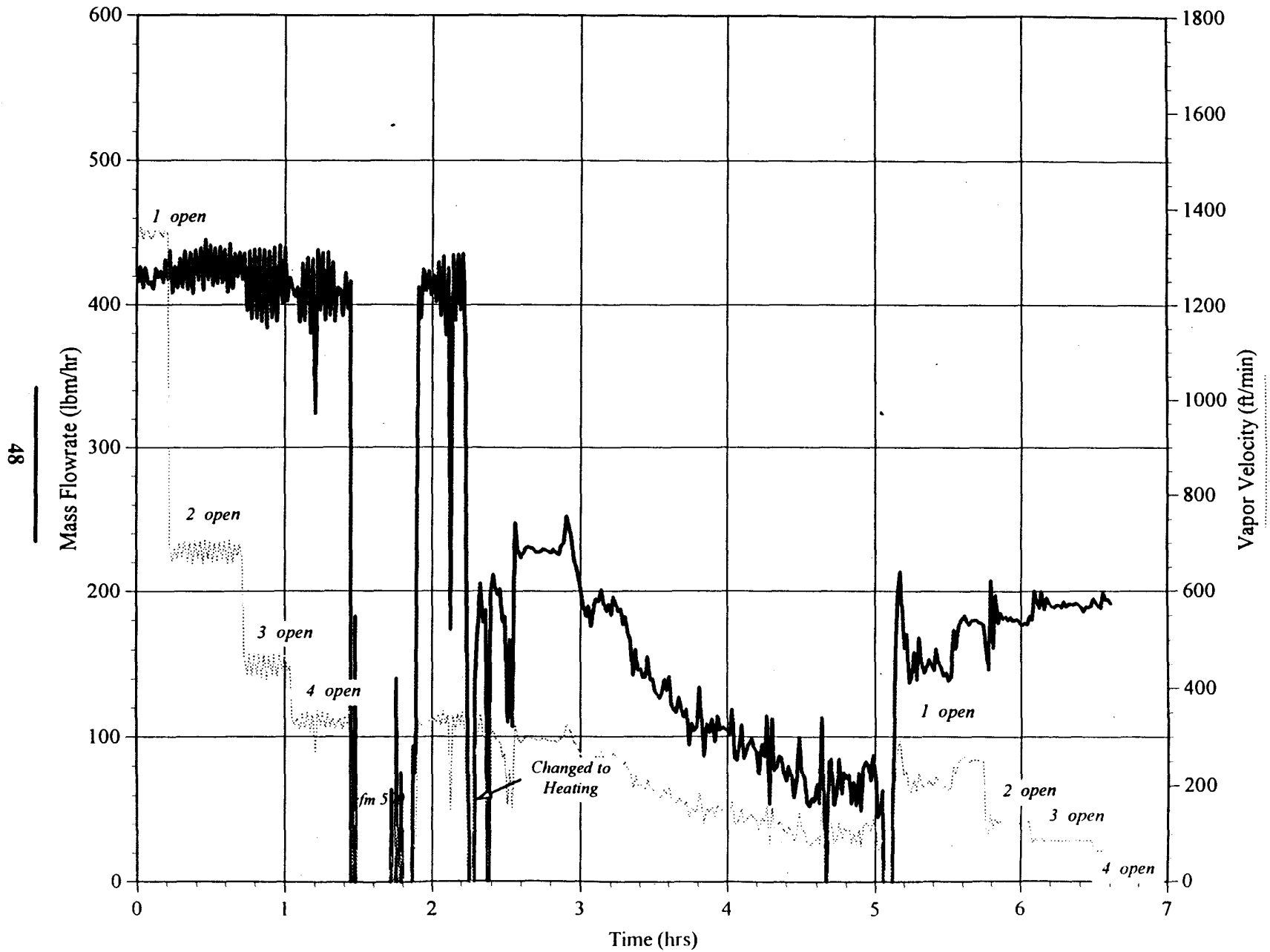
Oil Flows



Heat Pump R407C-Suniso 1GS Oil Circulation Tests (51&52)

Cooling & Heating Mode - No Oil Injection

SLO 3/12/96



Refrigerant/Lubricant Test Series

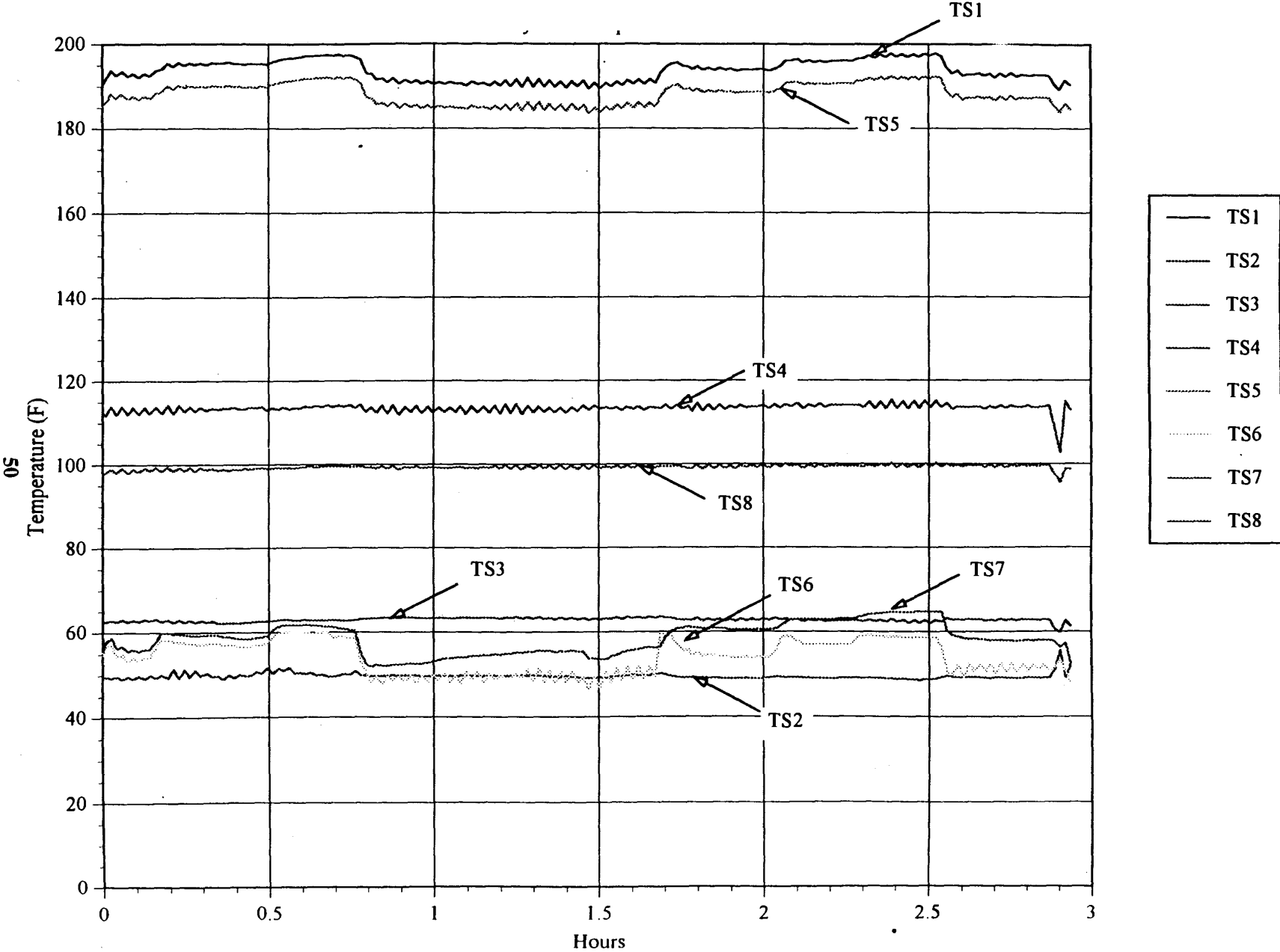
R407C - Castrol SW32

Heat Pump R407C- Castrol SW32 Oil Circulation Tests (7&8)

Cooling Mode - No Oil Injection

THS 2/1/96

System Temperatures

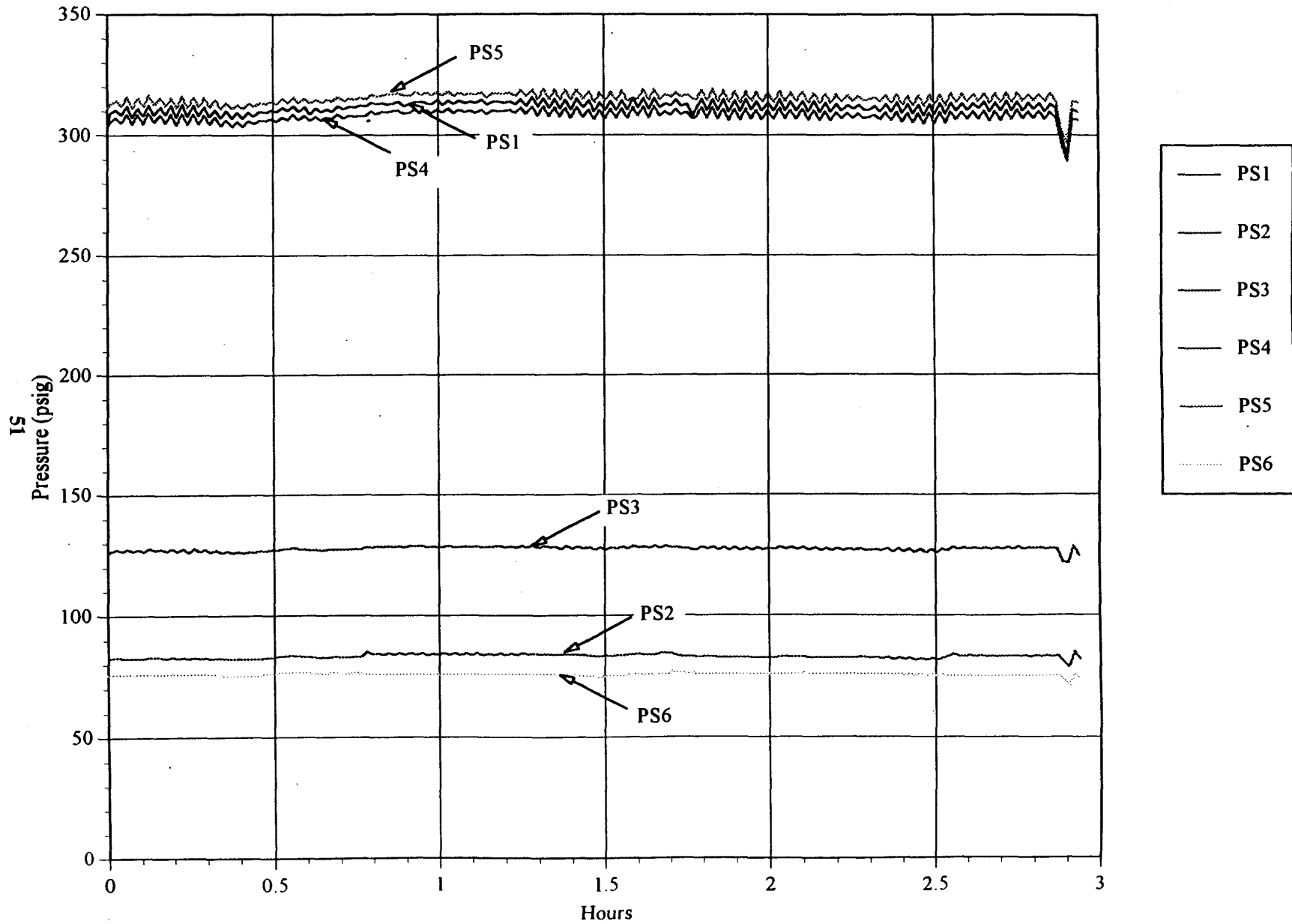


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (7&8)

THS 2/1/96

Cooling Mode - No Oil Injection

System Pressures

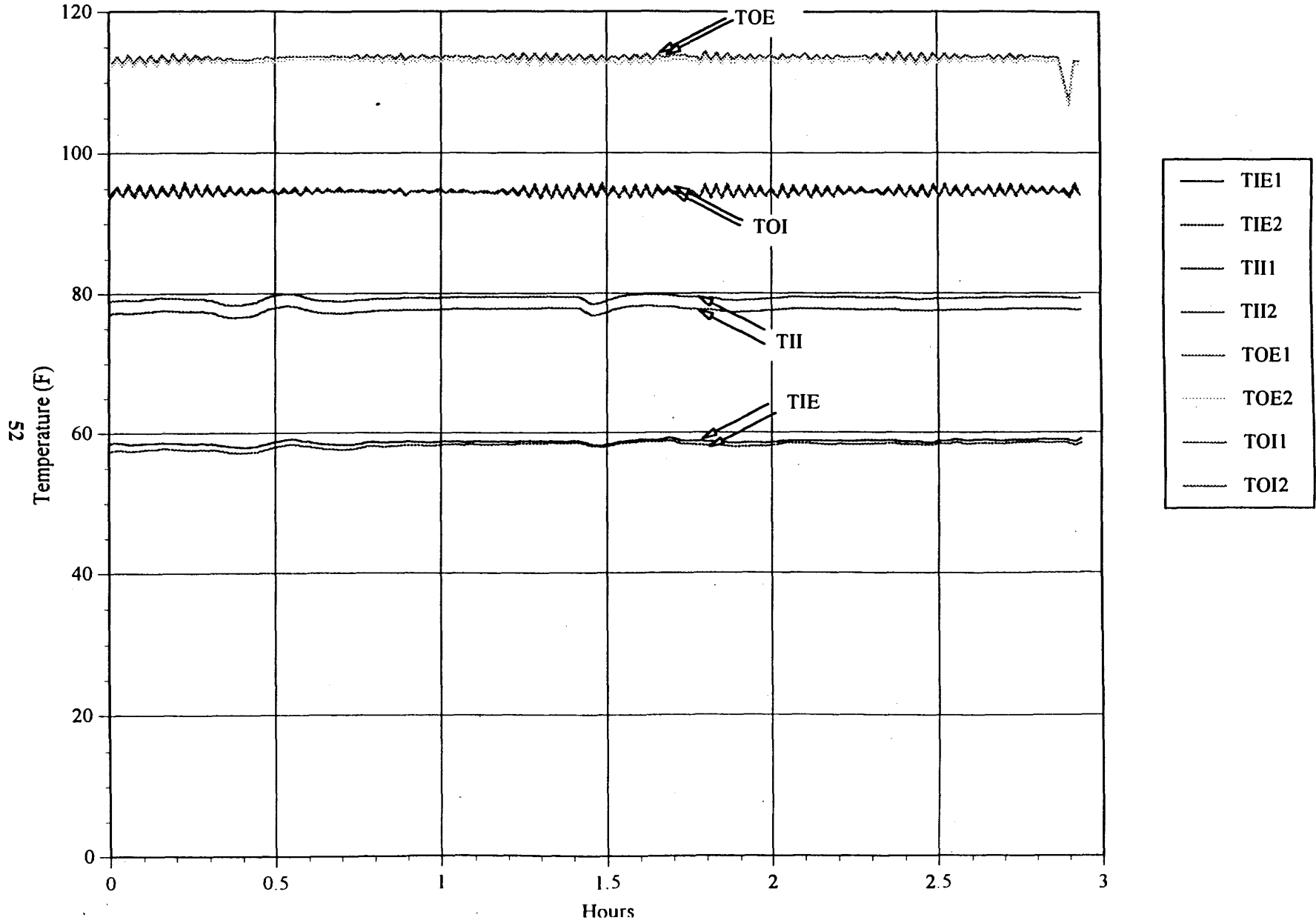


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (7&8)

THS 2/1/96

Cooling Mode - No Oil Injection

Air Side Temperatures

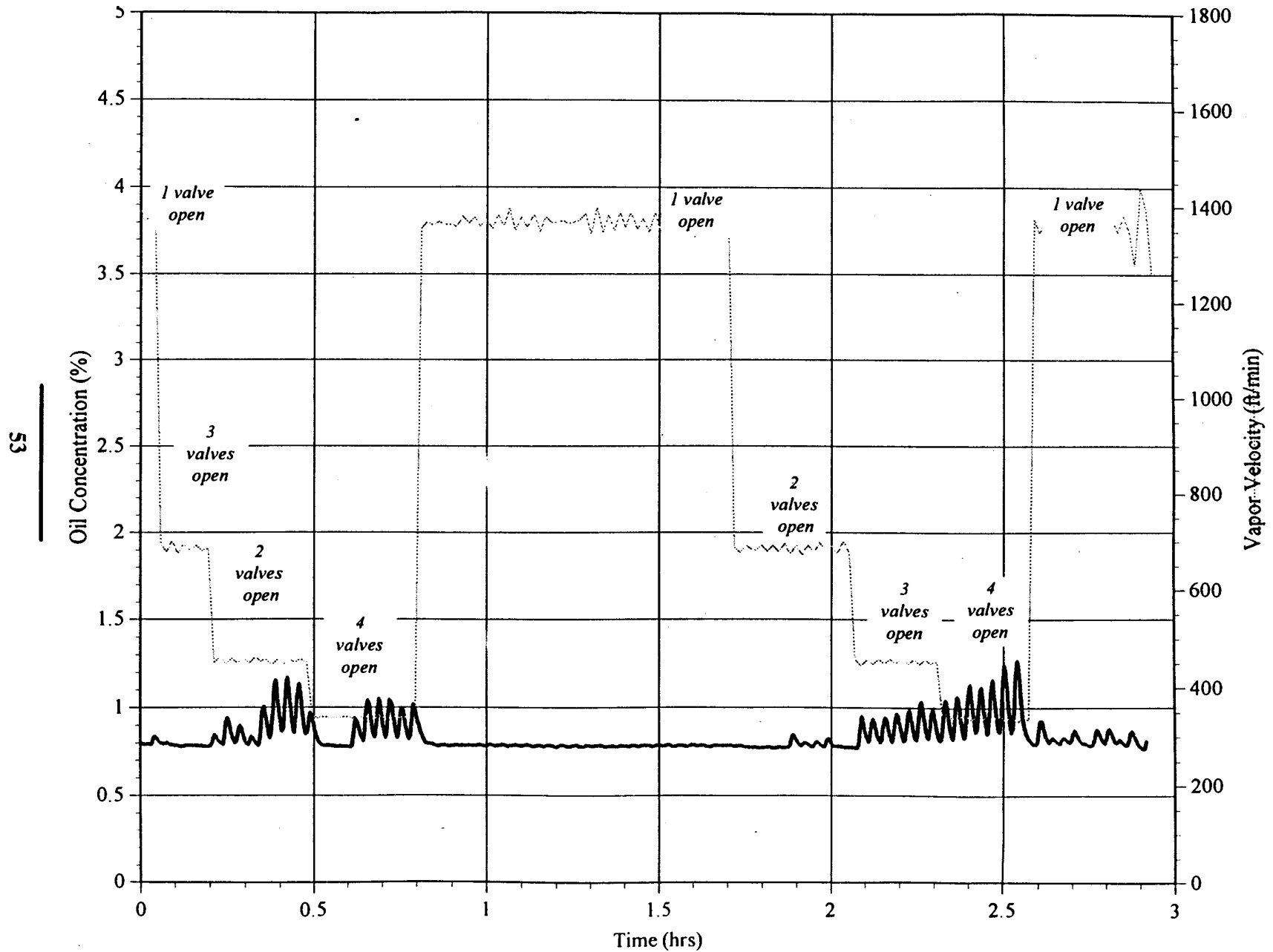


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (7&8)

Cooling Mode - No Oil Injection

THS 2/1/96

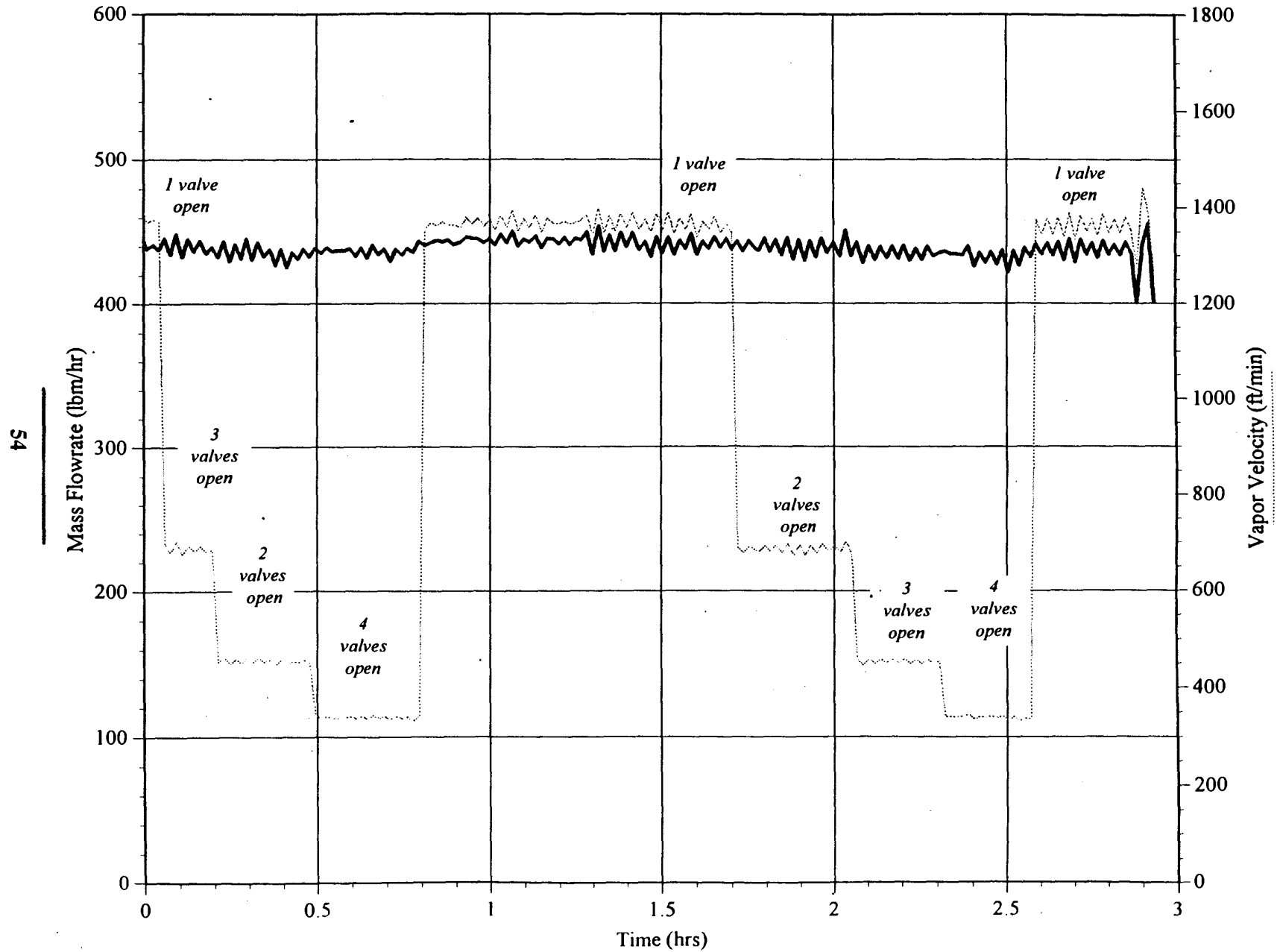
Oil Flows



Heat Pump R407C - Castrol SW32 Oil Circulation Tests (7&8)

Cooling Mode - No Oil Injection

THS 2/1/96

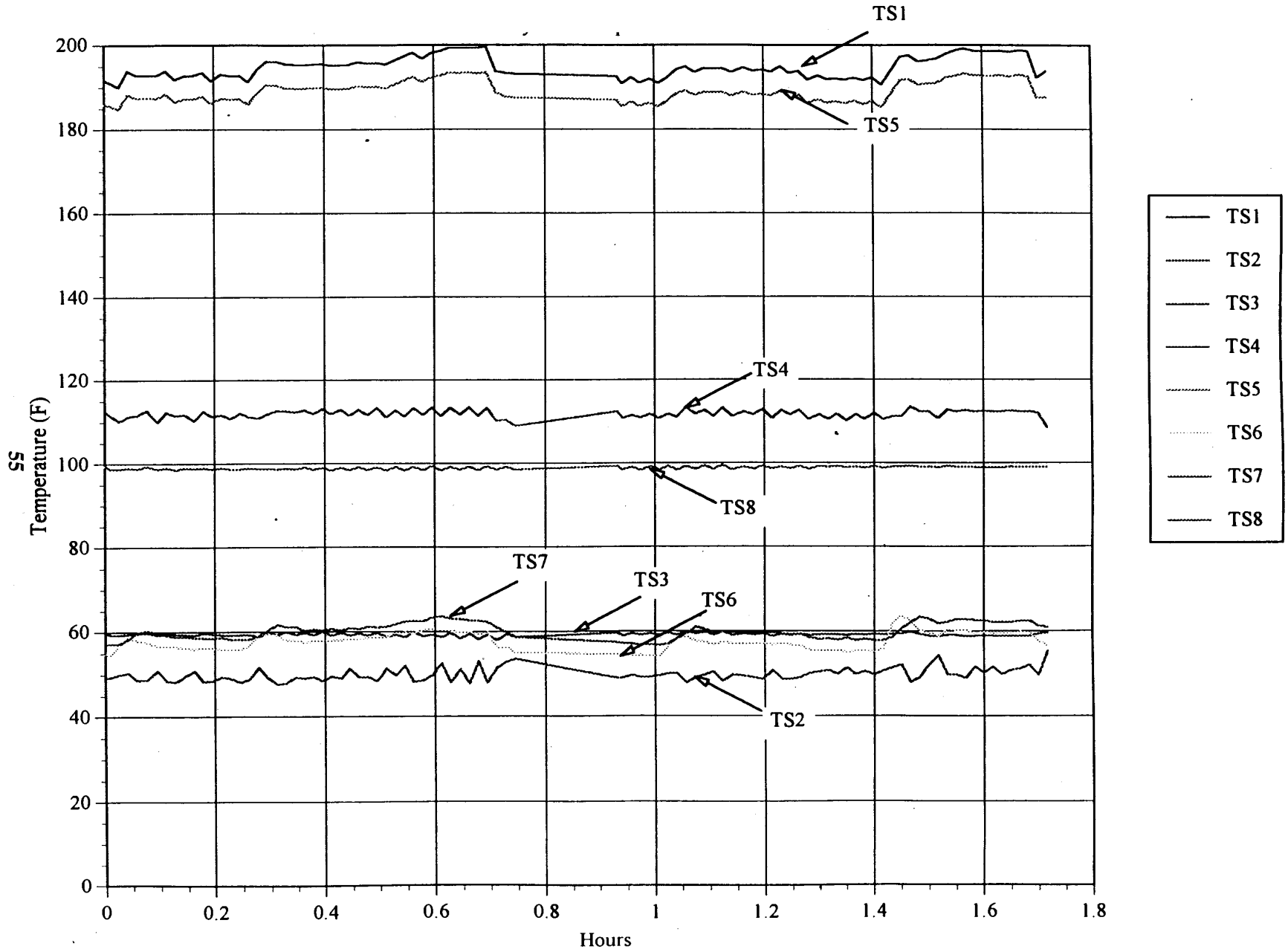


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (9&10)

Cooling Mode - Oil Injection

THS 2/2/96

System Temperatures

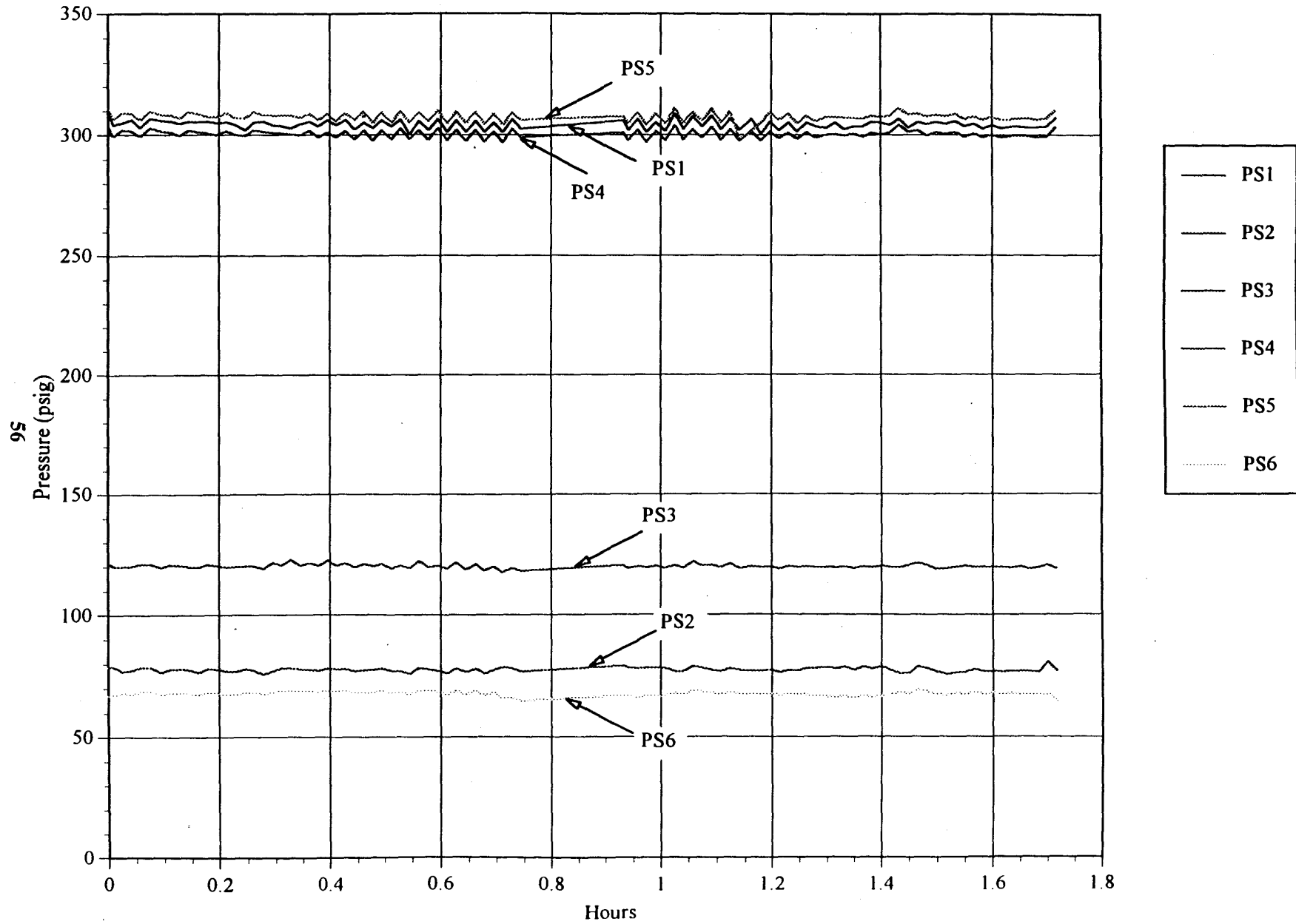


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (9&10)

THS 2/2/96

Cooling Mode - Oil Injection

System Pressures

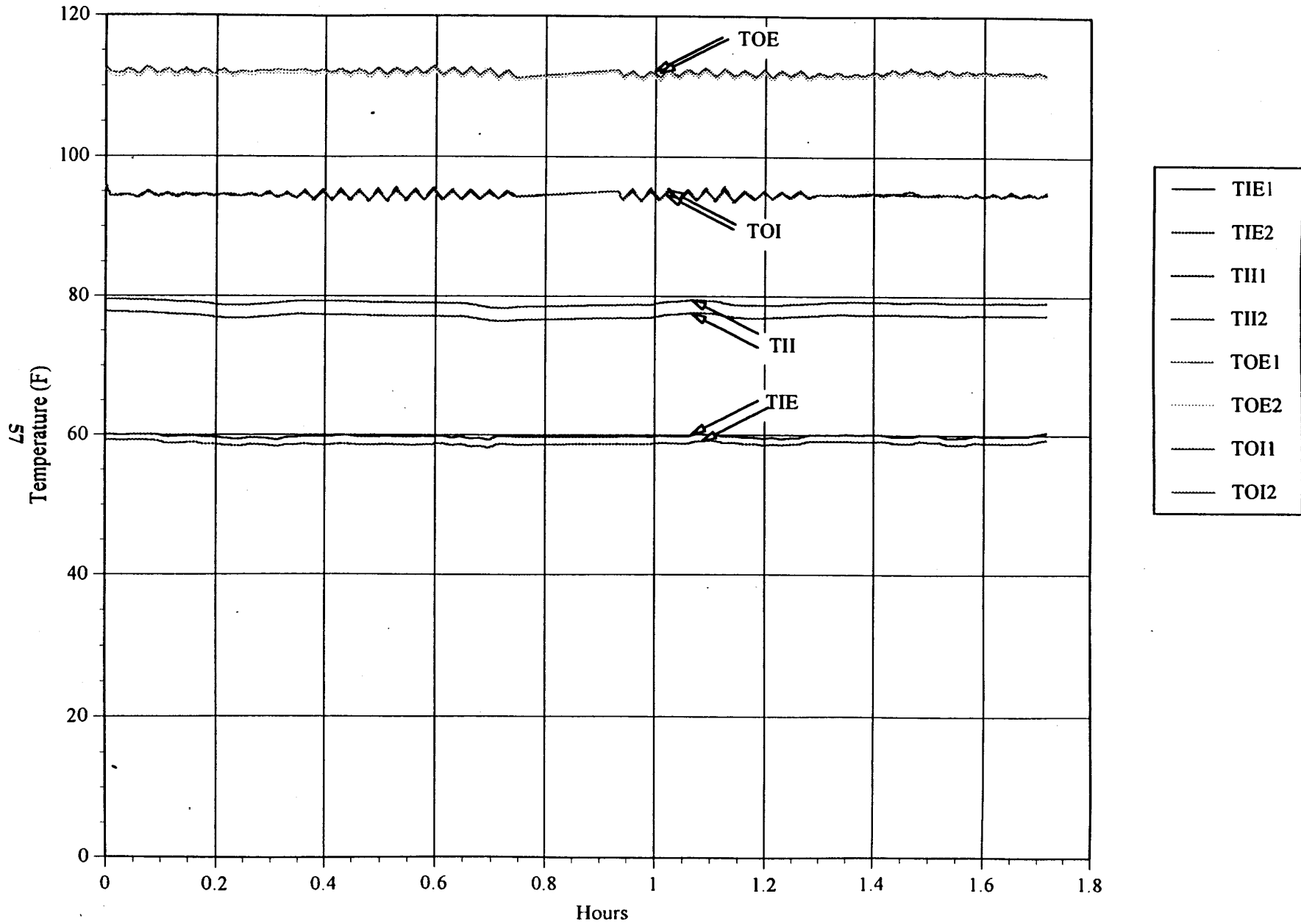


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (9&10)

THS 2/2/96

Cooling Mode - Oil Injection

Air Side Temperatures

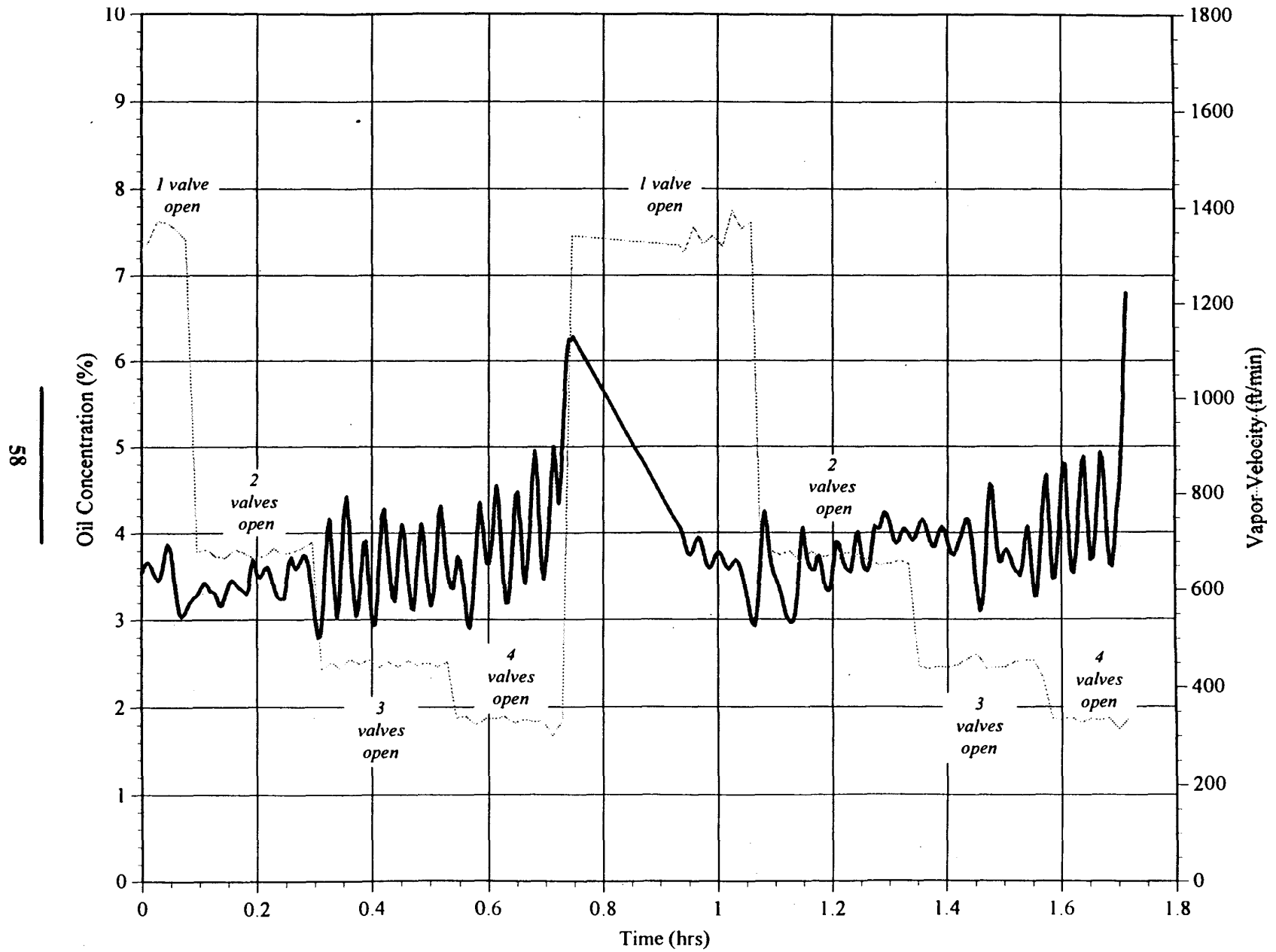


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (9&10)

Cooling Mode - Oil Injection

THS 2/2/96

Oil Flows

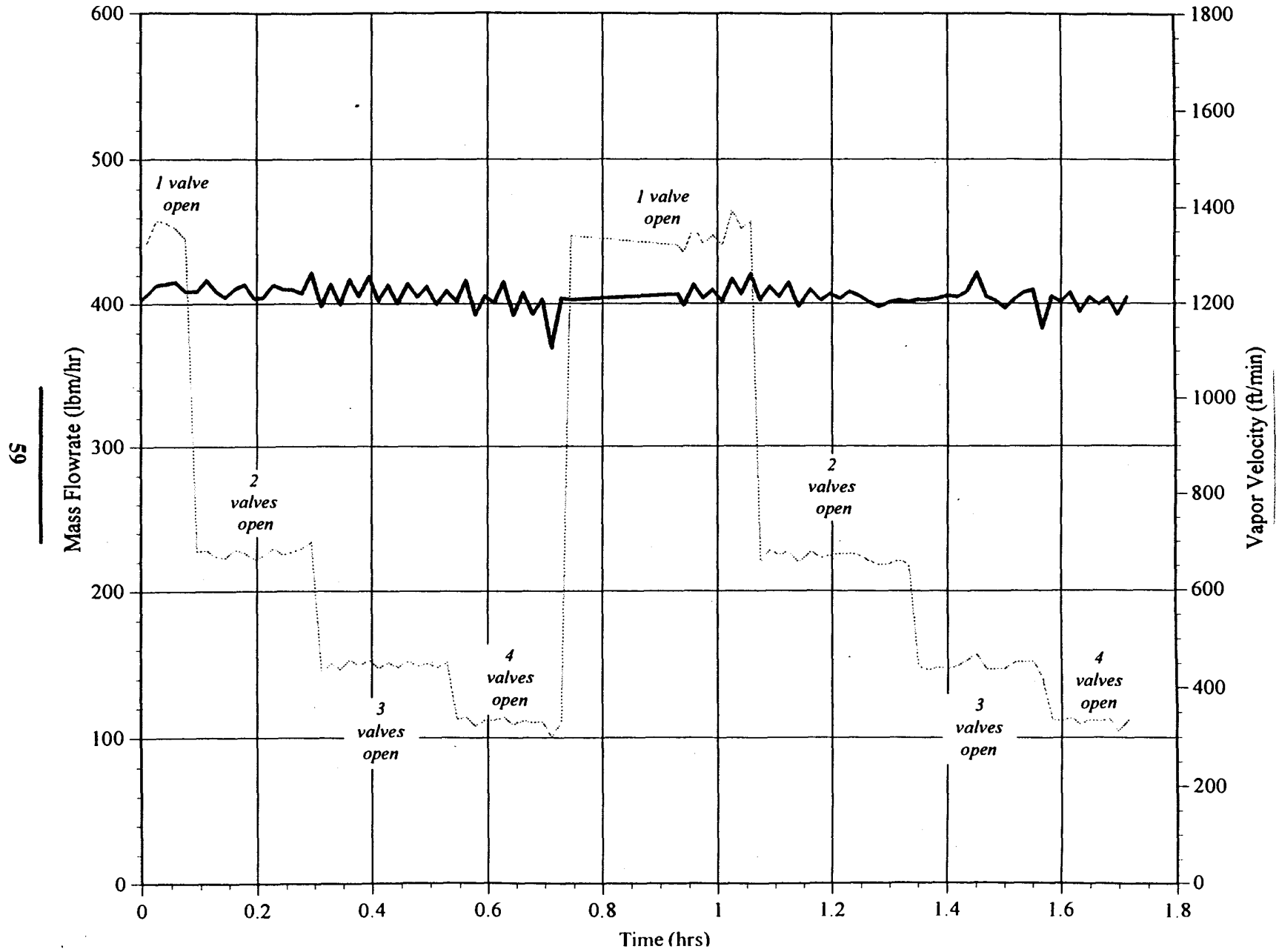


Heat Pump R407C- Castrol SW32 Oil Circulation Tests (9&10)

Cooling Mode - Oil Injection

THS 2/2/96

Oil Flows

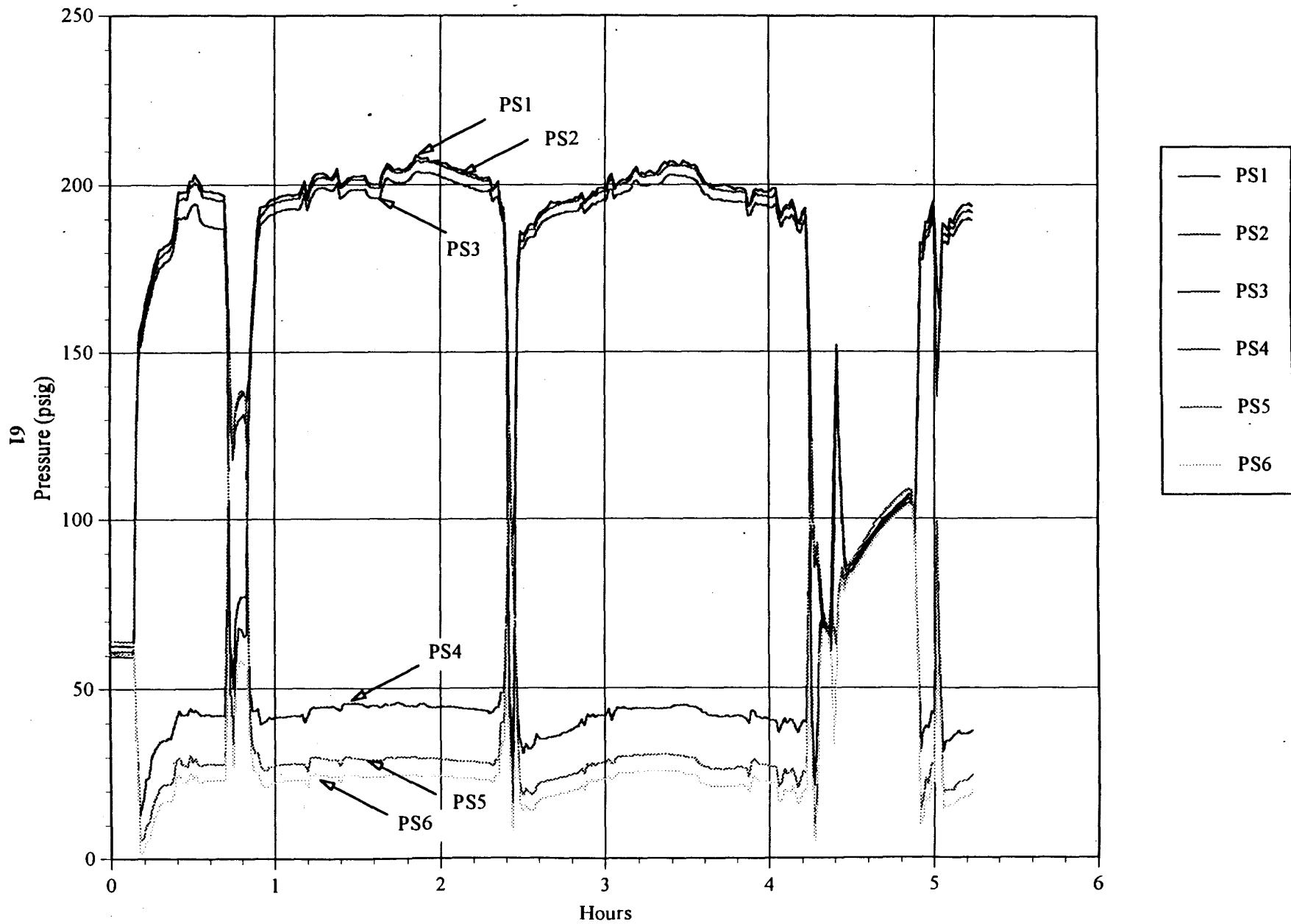


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (11&12)

THS 3/4/96

Heating Mode - No Oil Injection

System Pressures

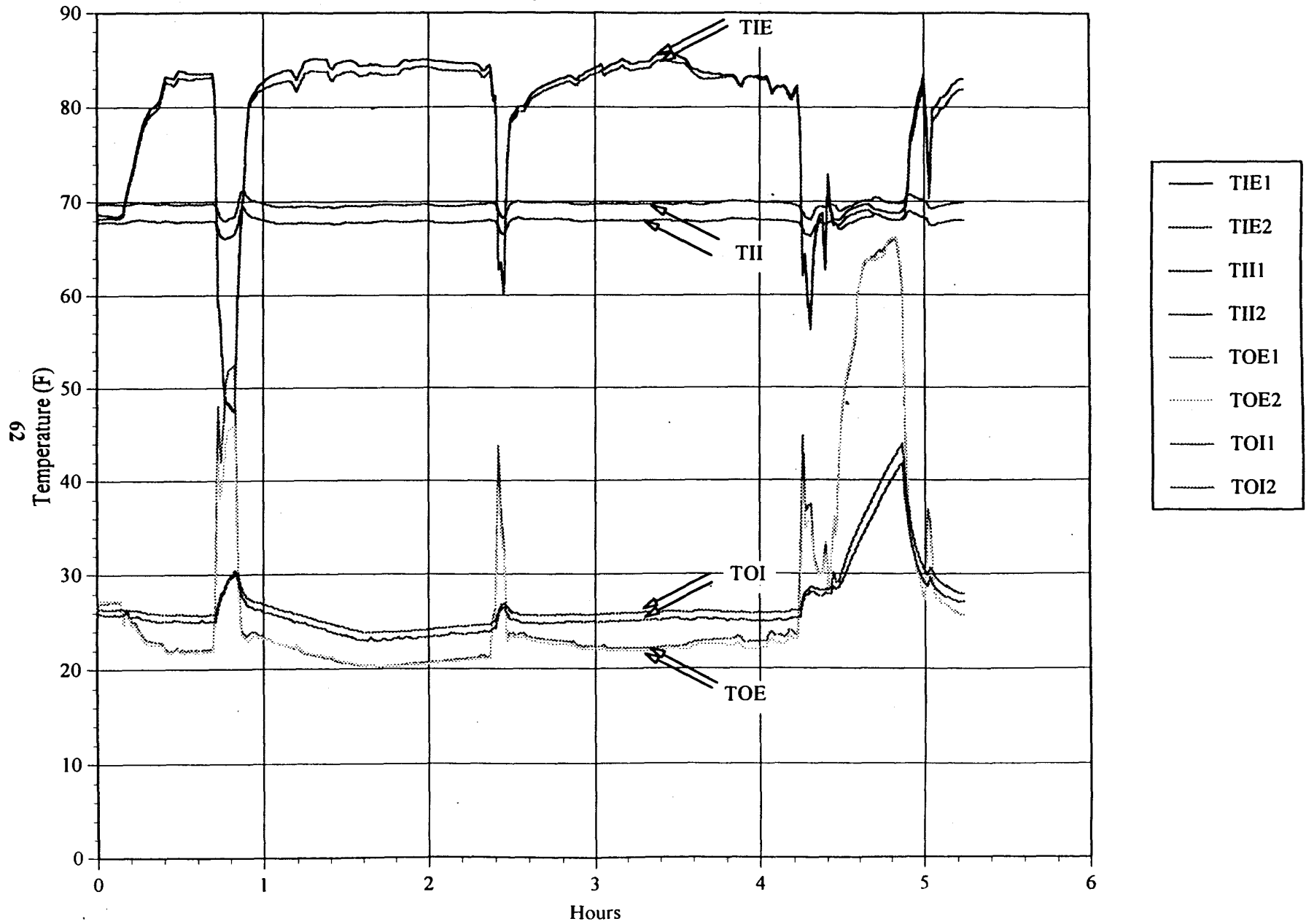


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (11&12)

THS 3/4/96

Heating Mode - No Oil Injection

Air Side Temperatures

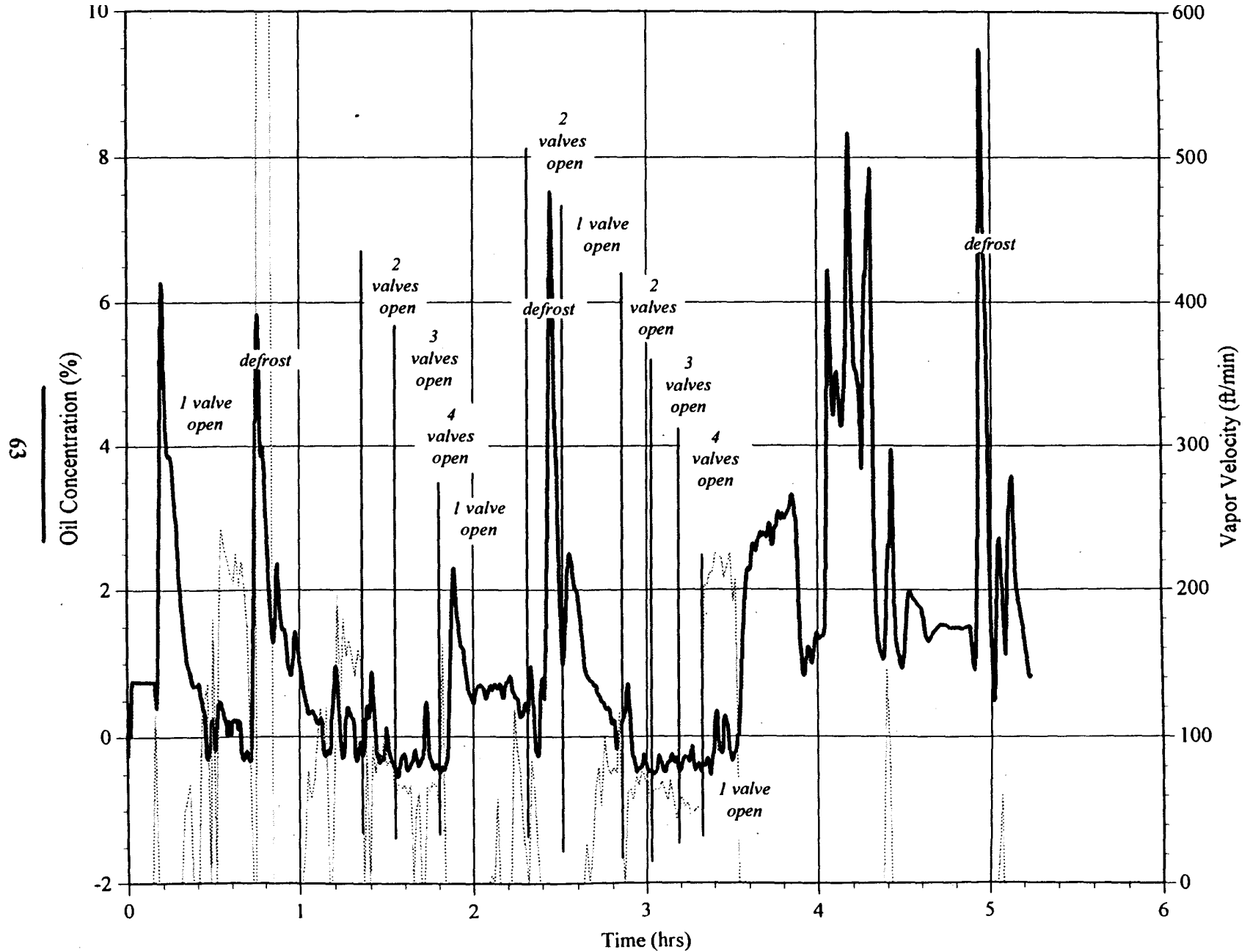


Heat Pump R407C - Castrol SW32 Oil Circulation Tests (11&12)

Heating Mode - No Oil Injection

THS 3/4/96

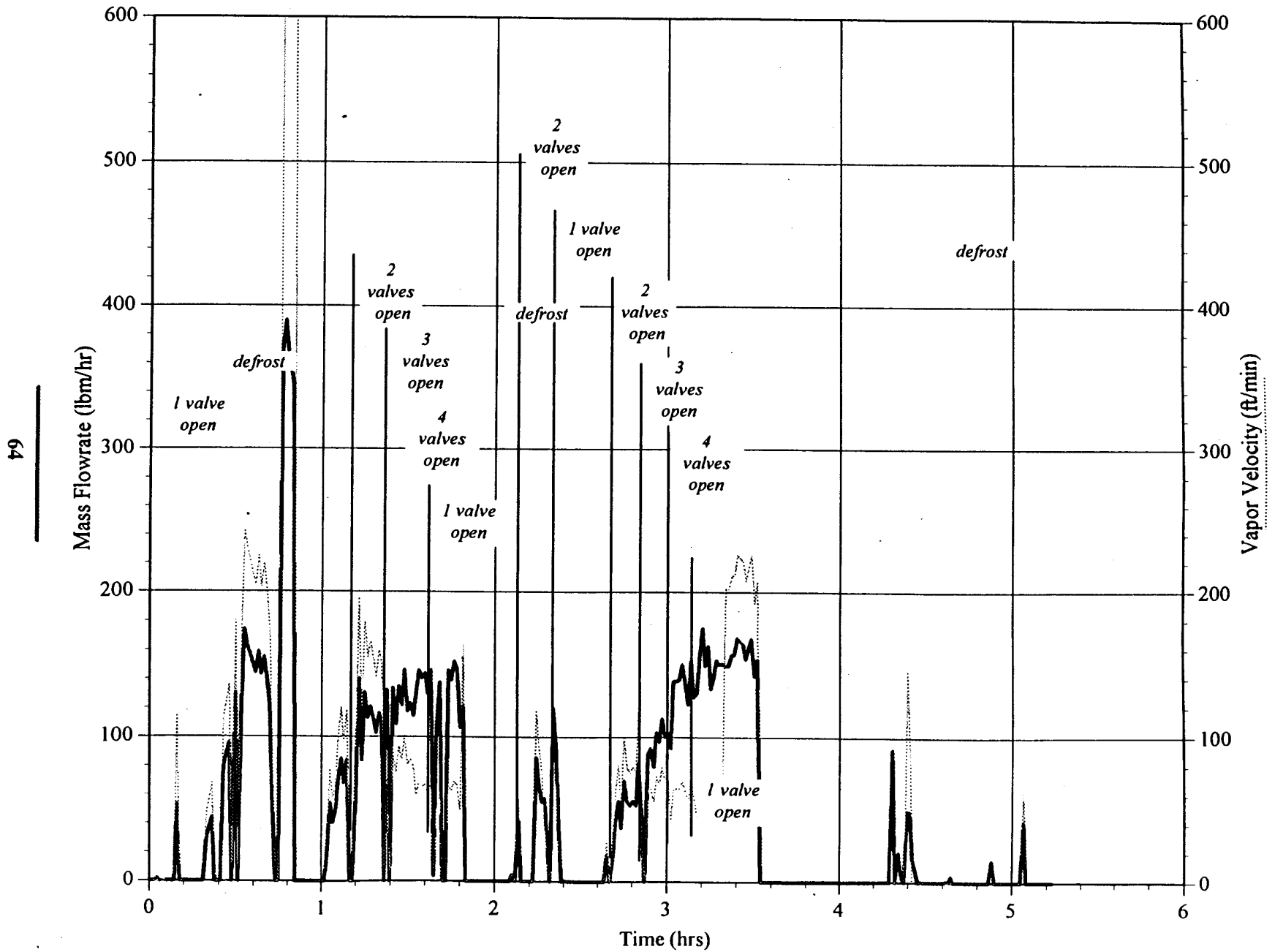
Oil Flows



Heat Pump R407C - Castrol SW32 Oil Circulation Tests (11&12)

Heating Mode - No Oil Injection

THS 3/4/96

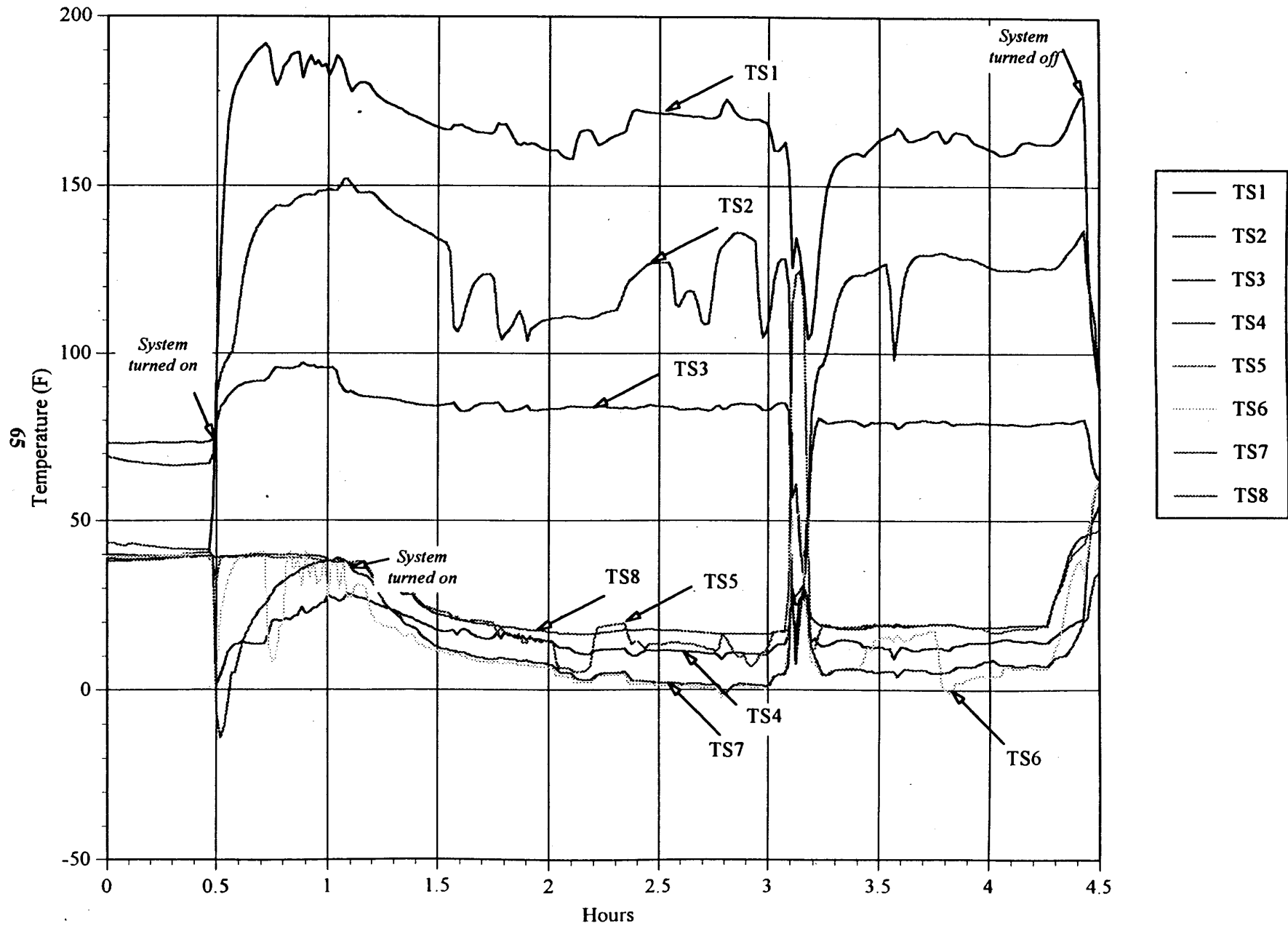


Heat Pump R407C-Castrol SW32 Oil Circulation Test (13)

Heating Mode - No Oil Injection

SLO 2/8/96

System Temperatures

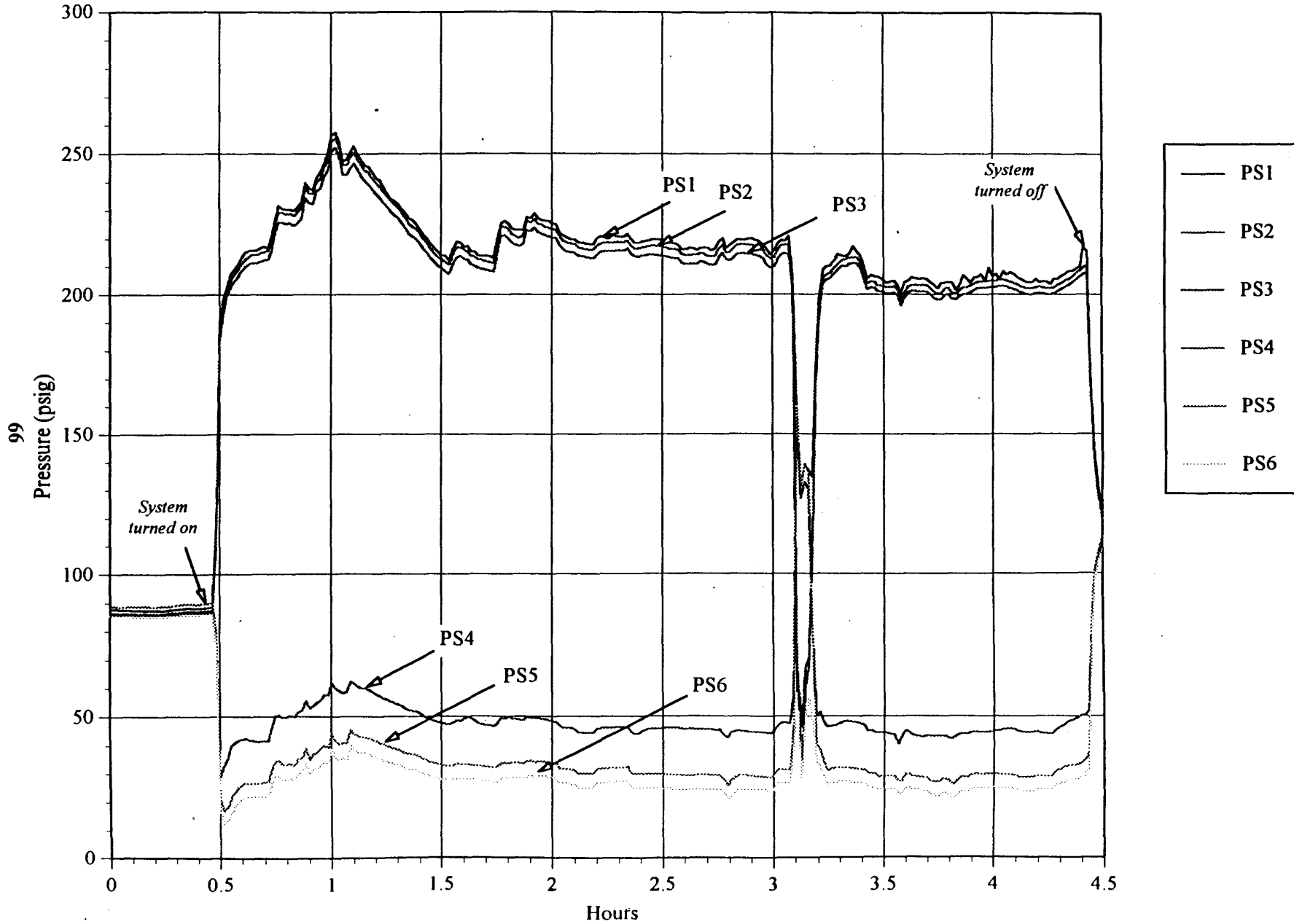


Heat Pump R407C-Castrol SW32 Oil Circulation Test (13)

SLO 2/8/96

Heating Mode - No Oil Injection

System Pressures

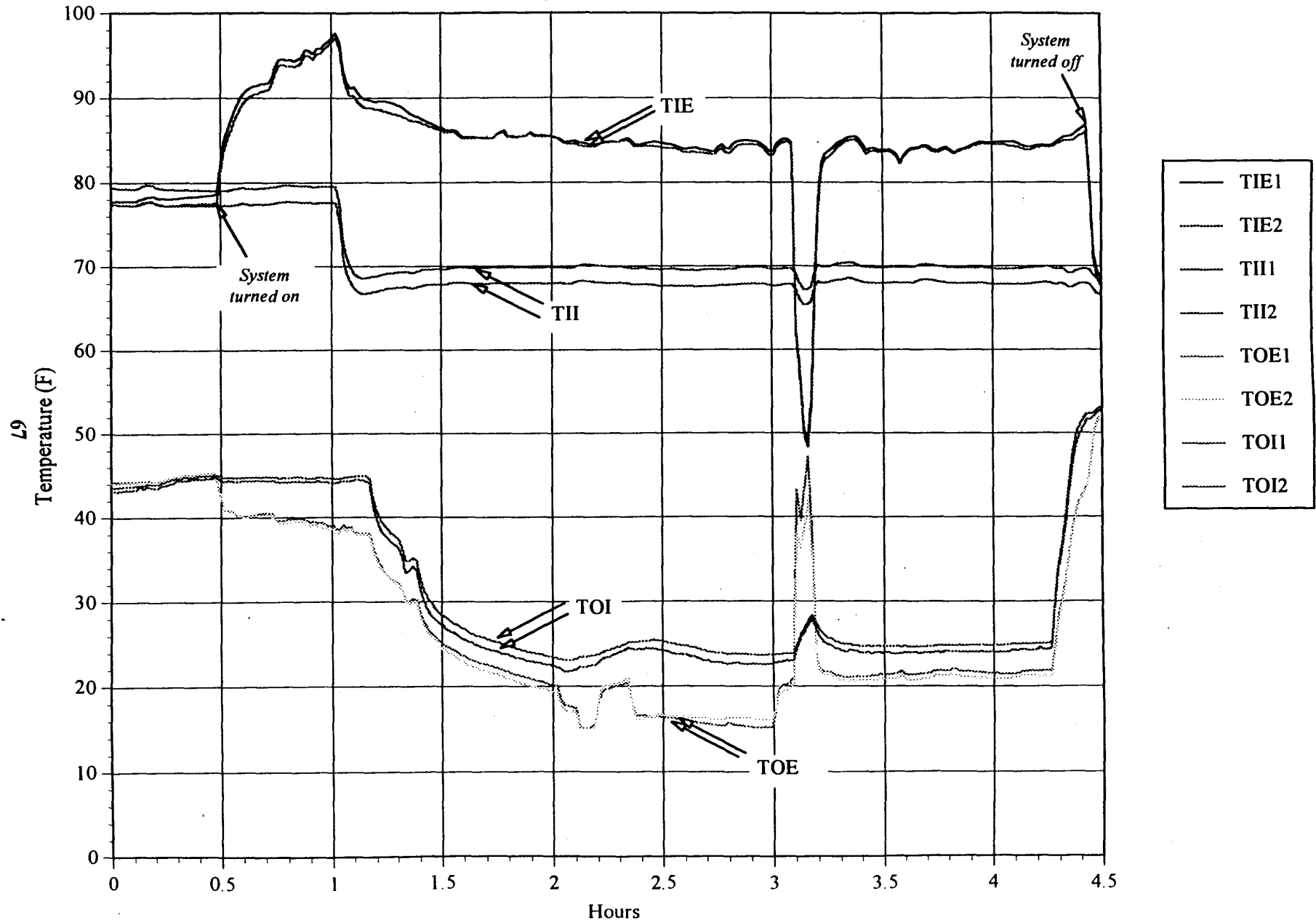


Heat Pump R407C-Castrol SW32 Oil Circulation Test (13)

SLO 2/8/96

Heating Mode - No Oil Injection

Air Side Temperatures

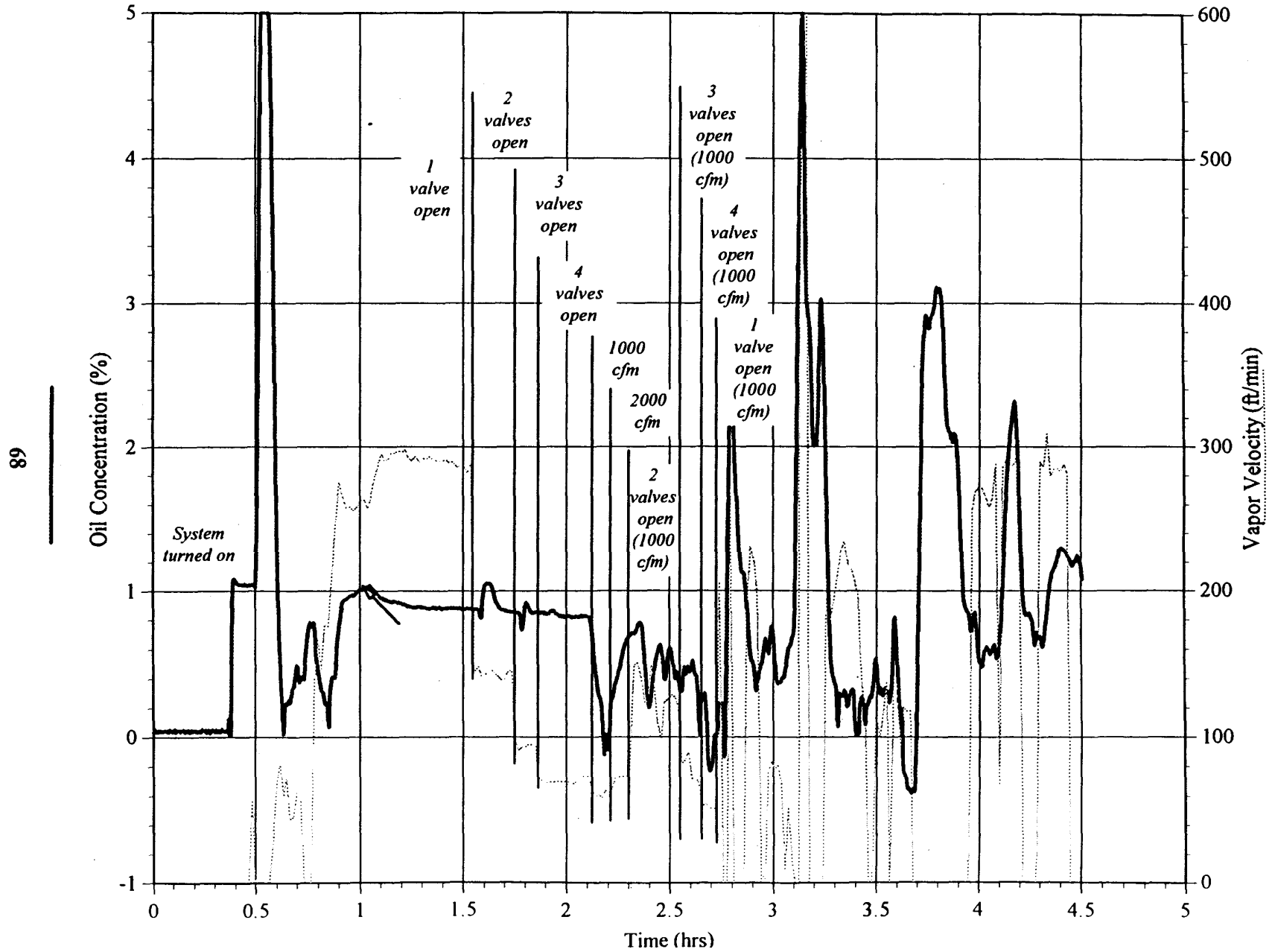


Heat Pump R407C-Castrol SW32 Oil Circulation Test (13)

Heating Mode - No Oil Injection

SLO 2/8/96

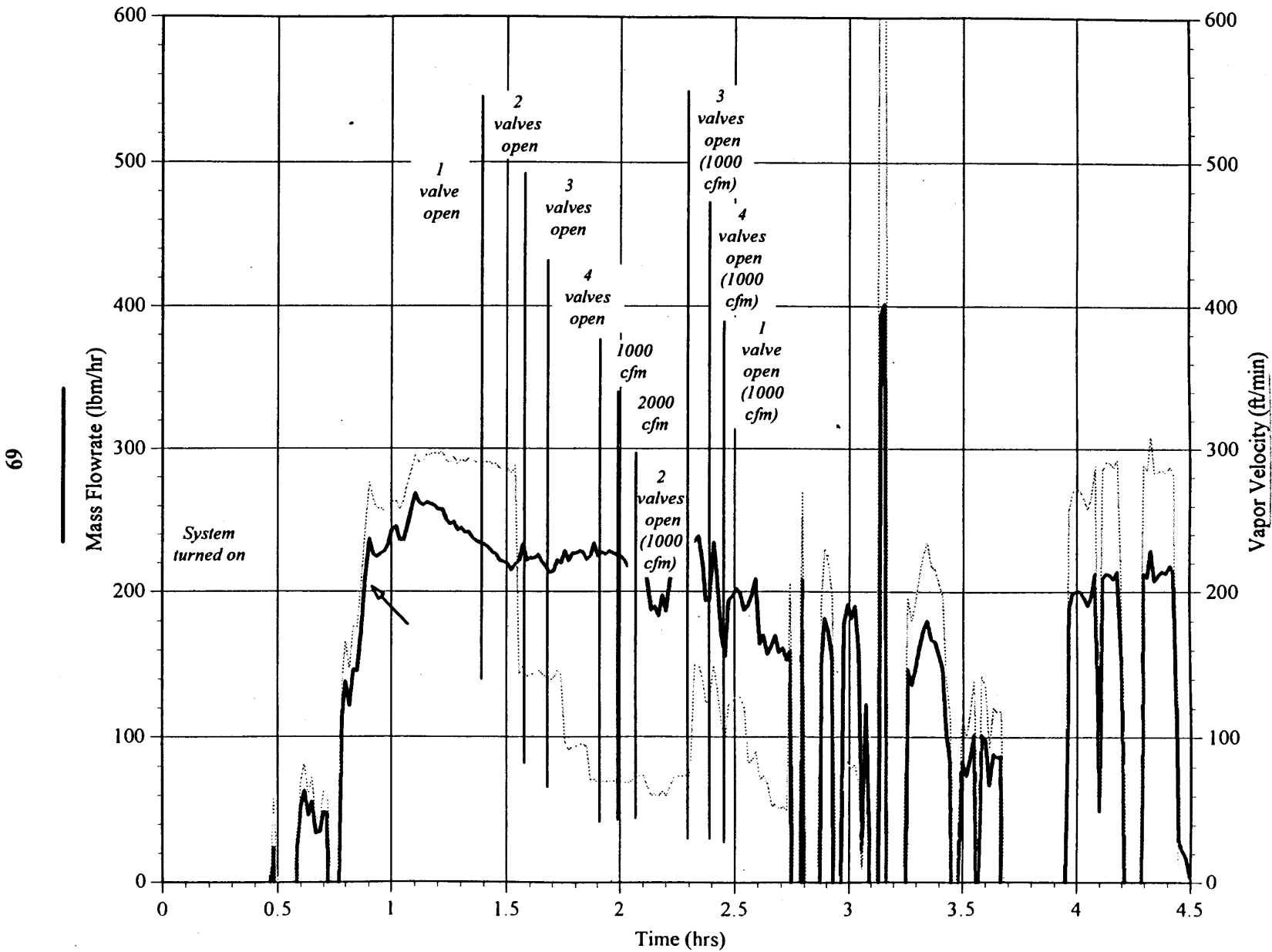
Oil Flows



Heat Pump R407C-Castrol SW32 Oil Circulation Test (13)

SLO 2/8/96

Heating Mode - No Oil Injection

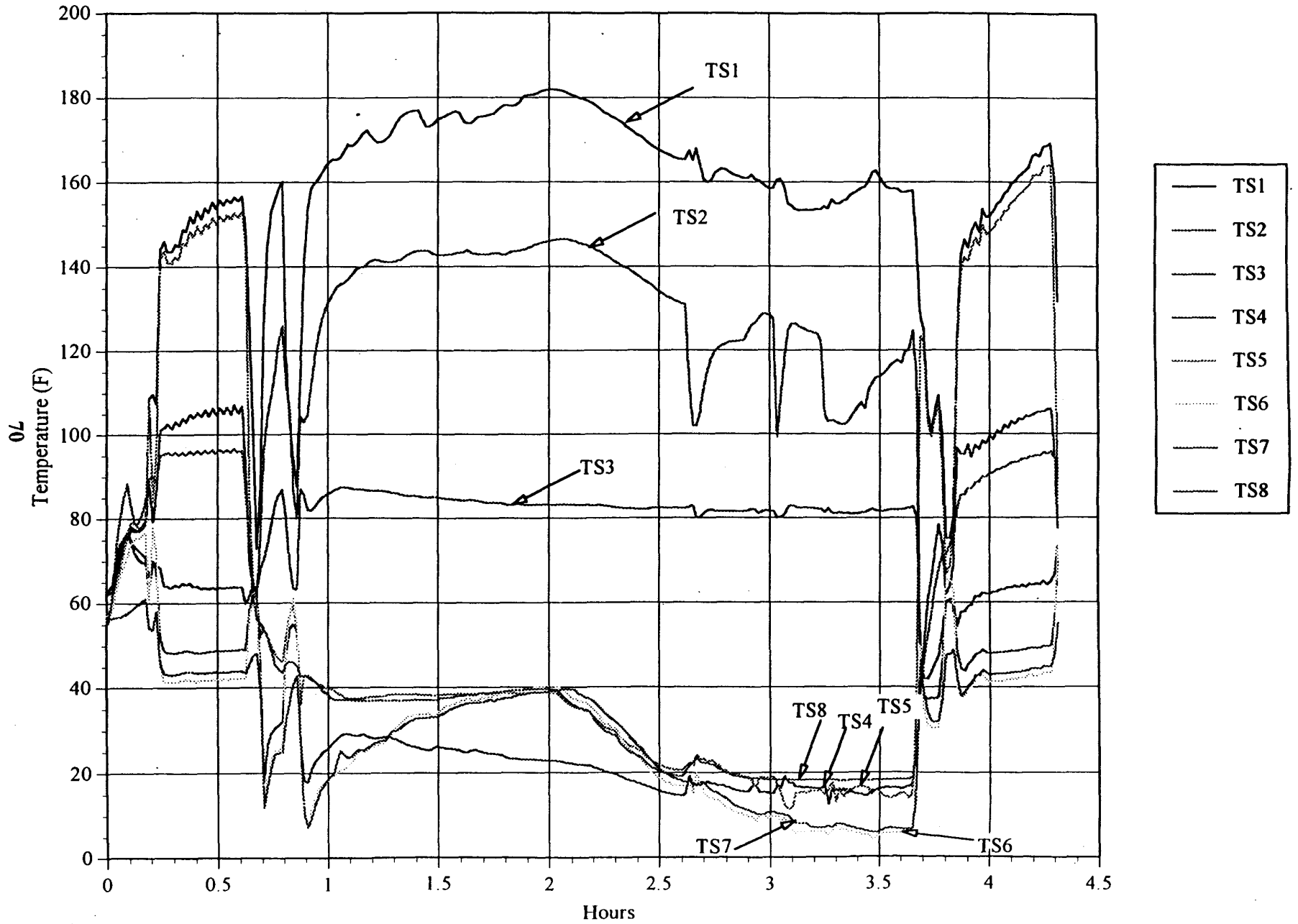


Heat Pump R407C - Castrol SW32 Oil Circulation Test (14)

THS 2/29/96

Heating Mode - Oil Injection

System Temperatures

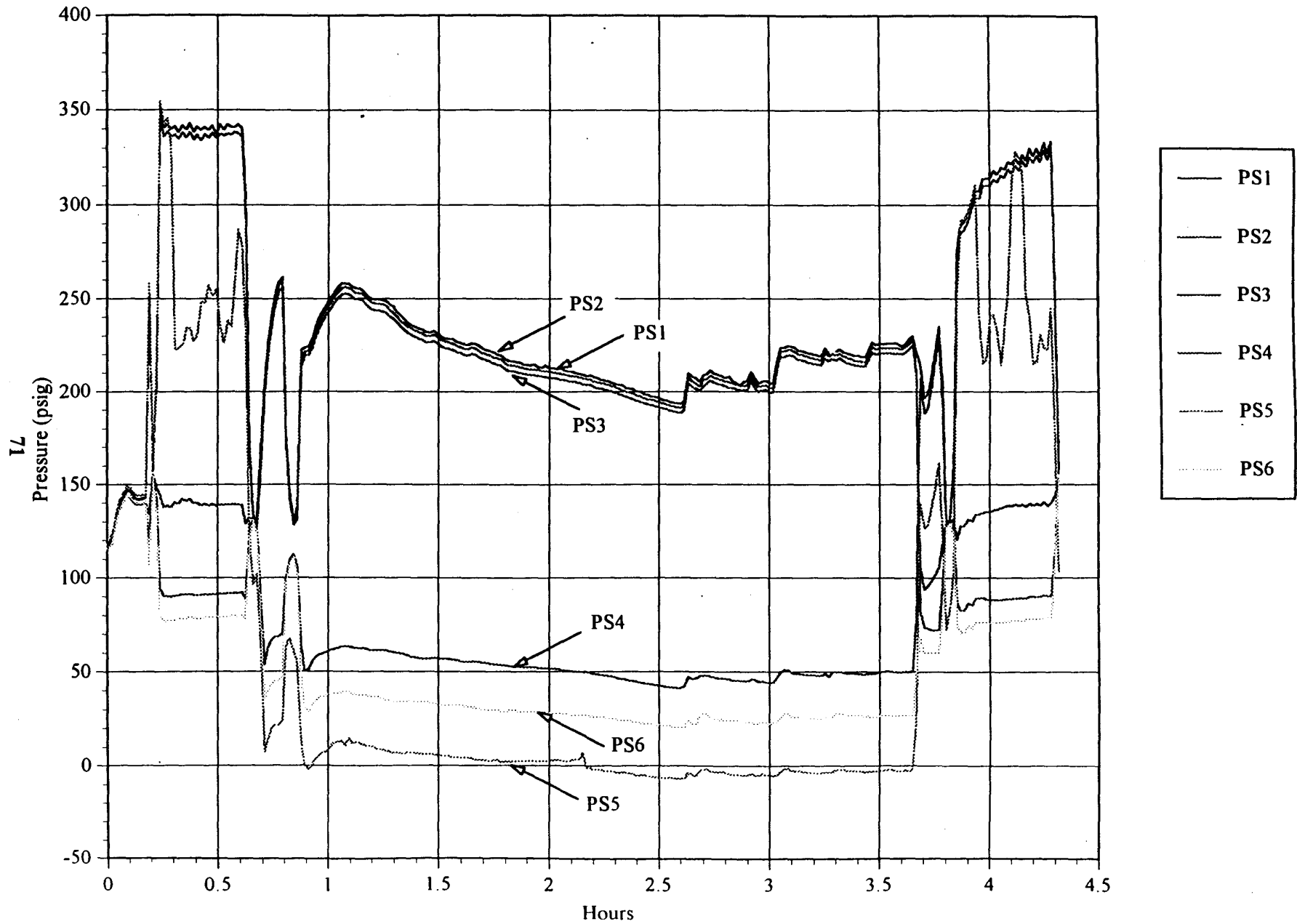


Heat Pump R407C - Castrol SW32 Oil Circulation Test (14)

THS 2/29/96

Heating Mode - Oil Injection

System Pressures

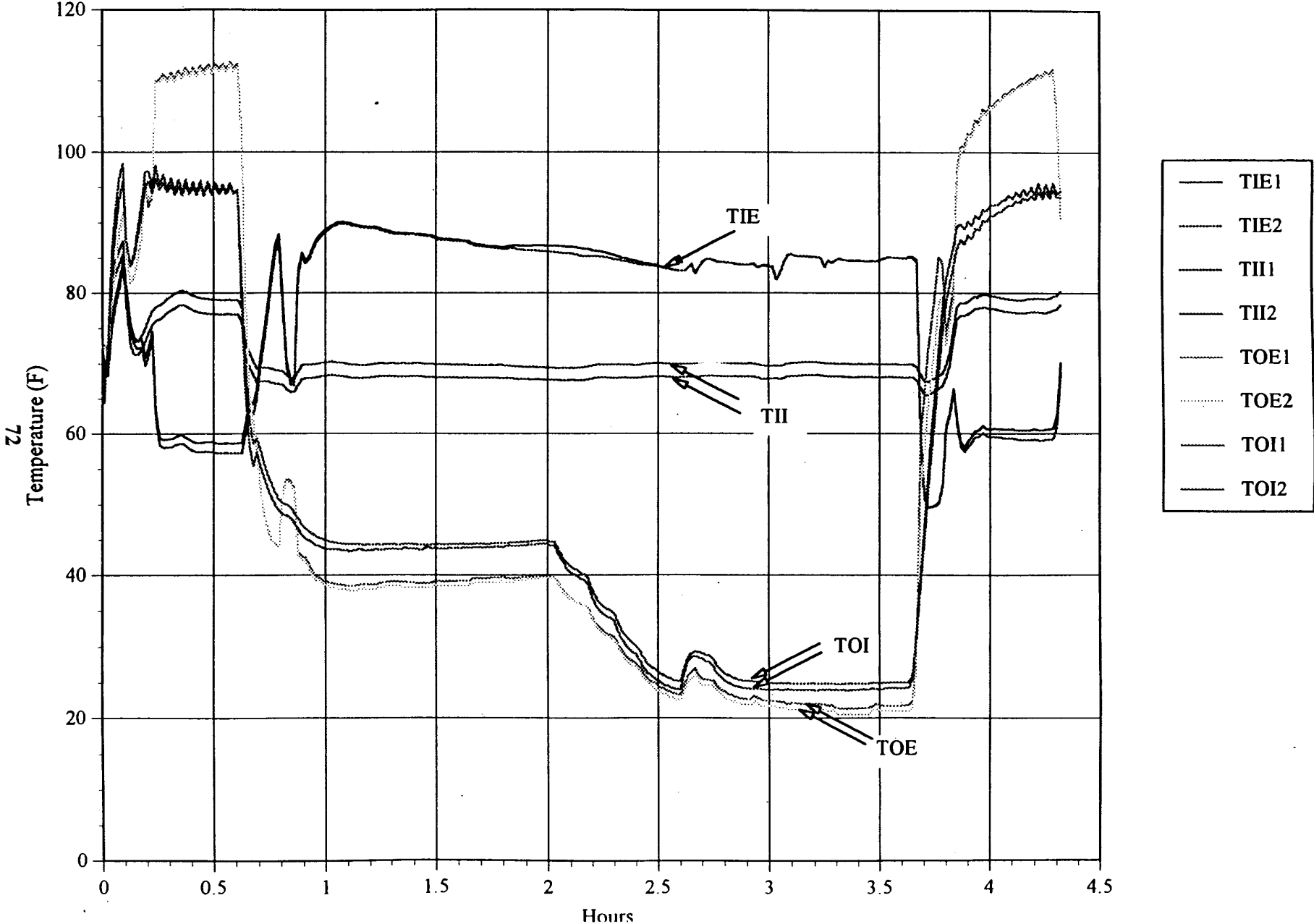


Heat Pump R407C - Castrol SW32 Oil Circulation Test (14)

Heating Mode - Oil Injection

THS 2/29/96

Air Side Temperatures

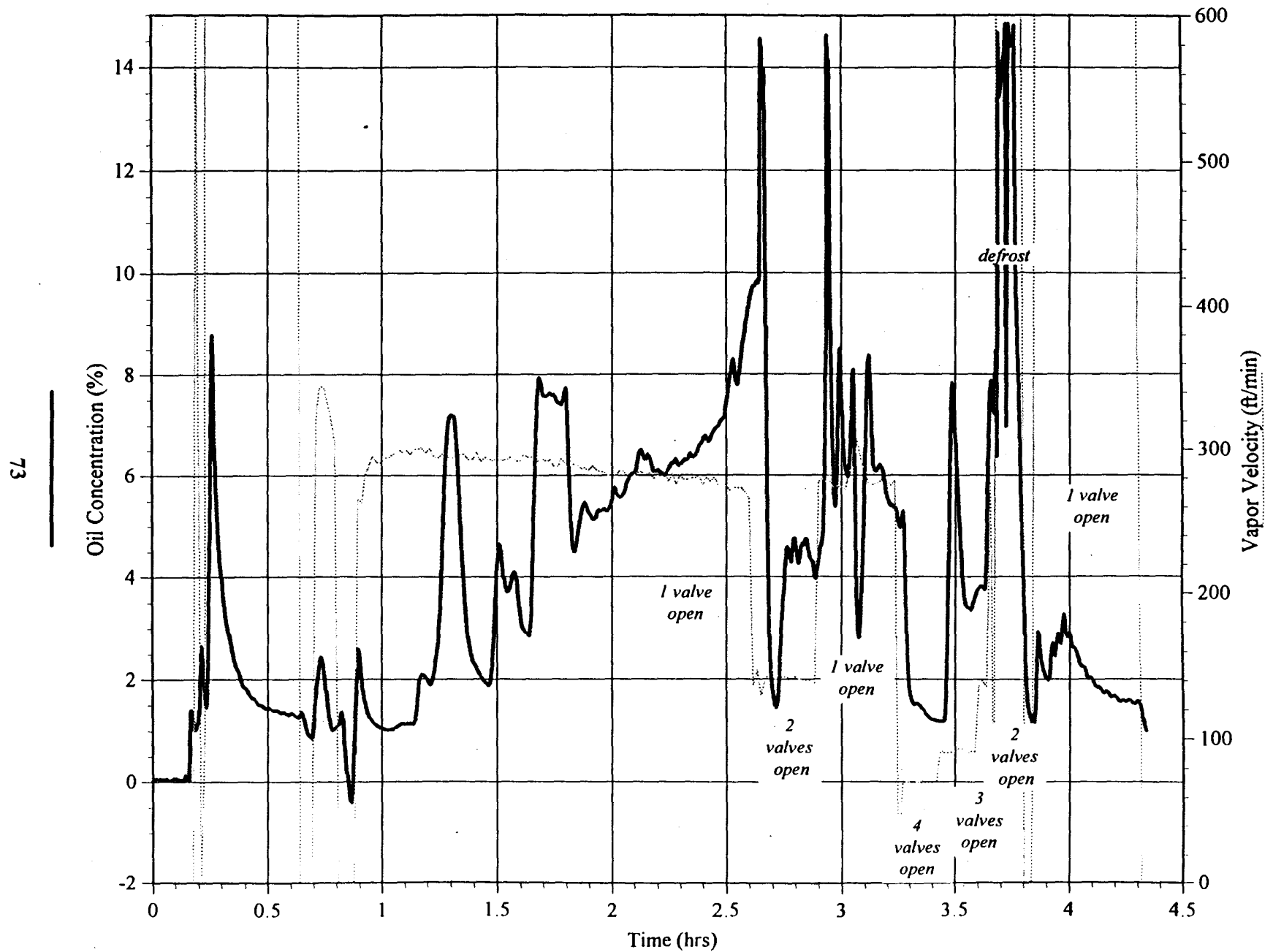


Heat Pump R407C - Castrol SW32 Oil Circulation Test (14)

Heating Mode - Oil Injection

THS 2/29/96

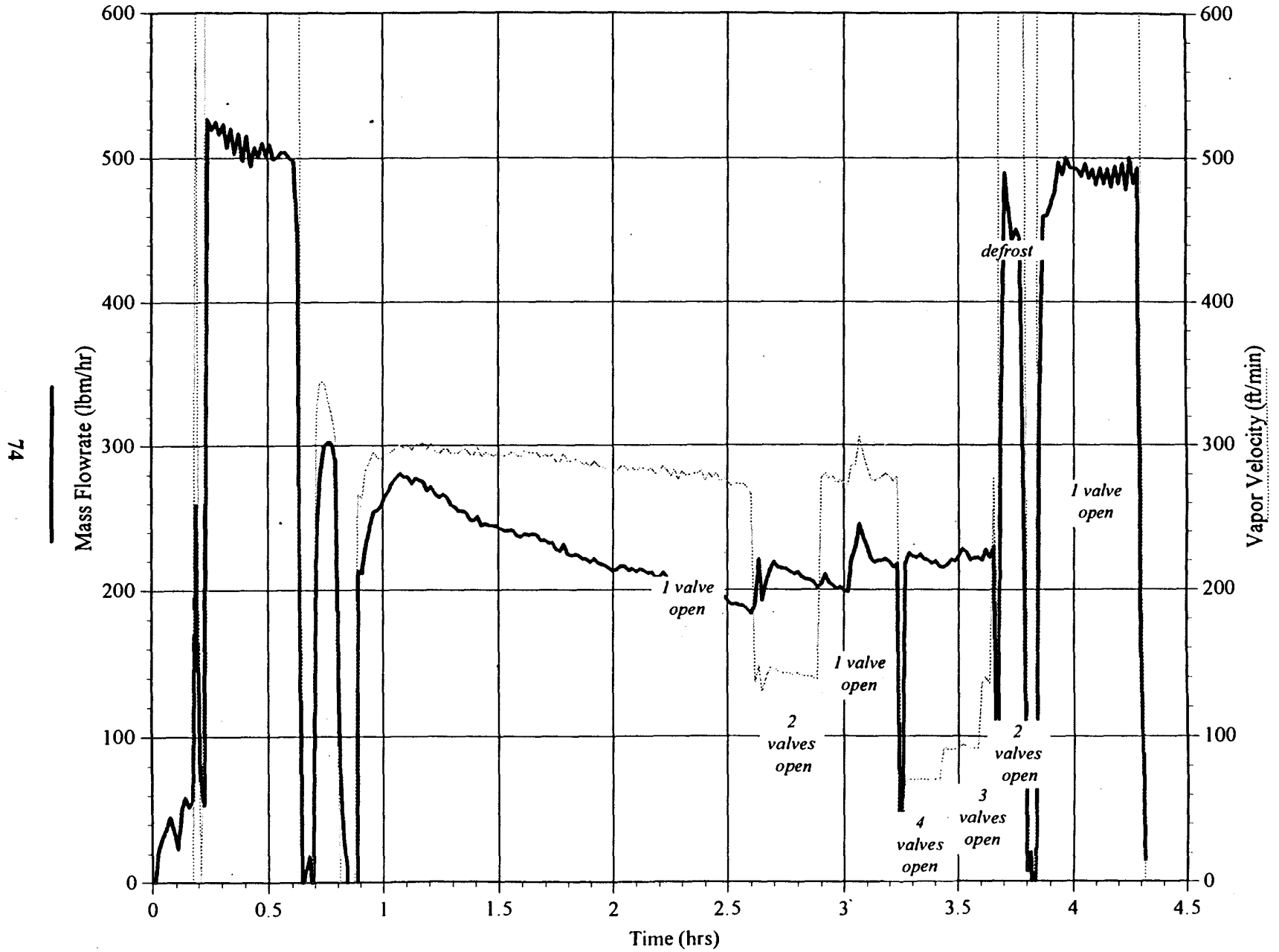
Oil Flows



Heat Pump R407C - Castrol SW32 Oil Circulation Test (14)

THS 2/29/96

Heating Mode - Oil Injection



Refrigerant/Lubricant Test Series

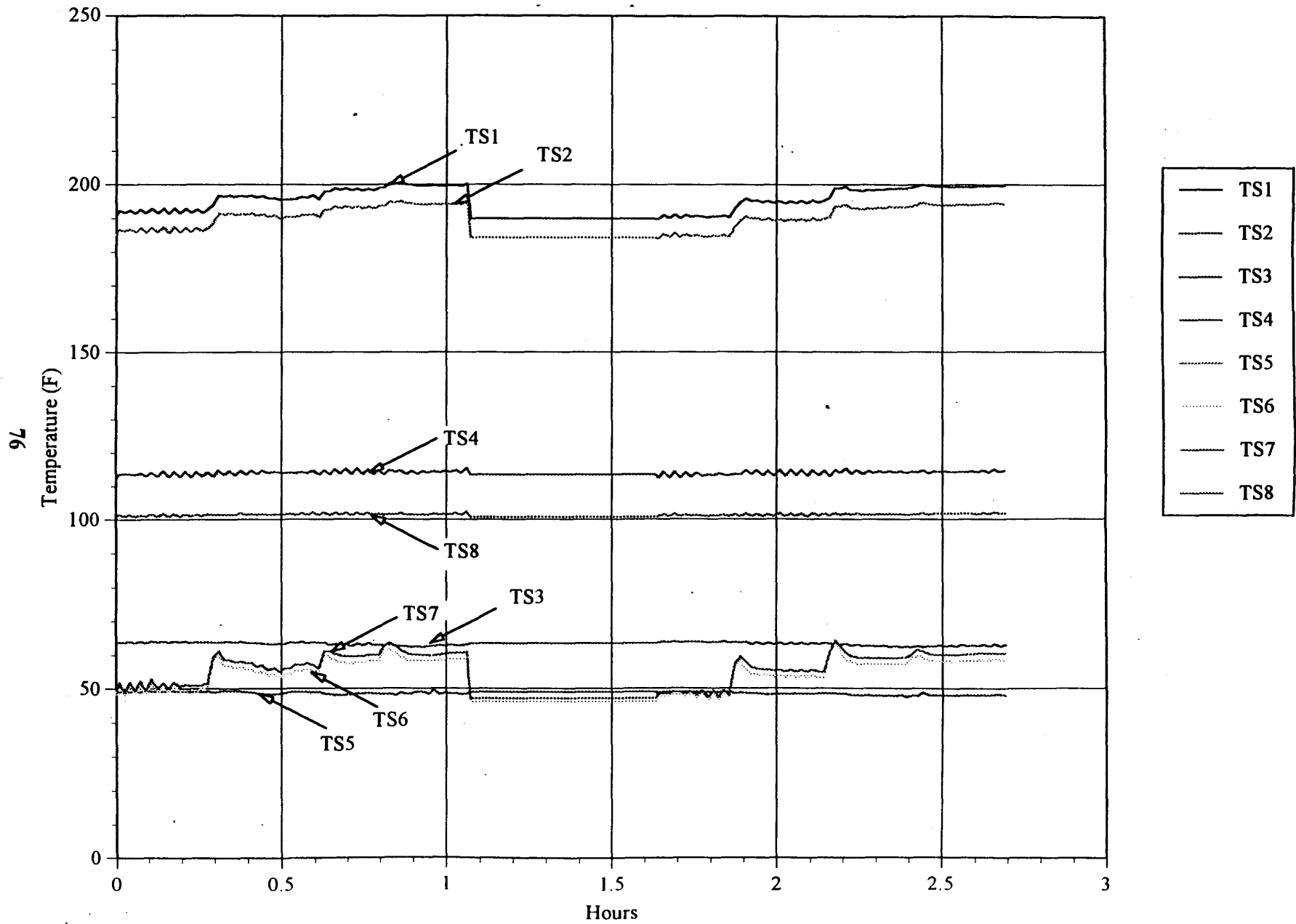
R407C - Castrol SW68

Heat Pump R407C- Castrol SW68 Oil Circulation Tests (15&16)

Cooling Mode - No Oil Injection

THS 2/29/96

System Temperatures

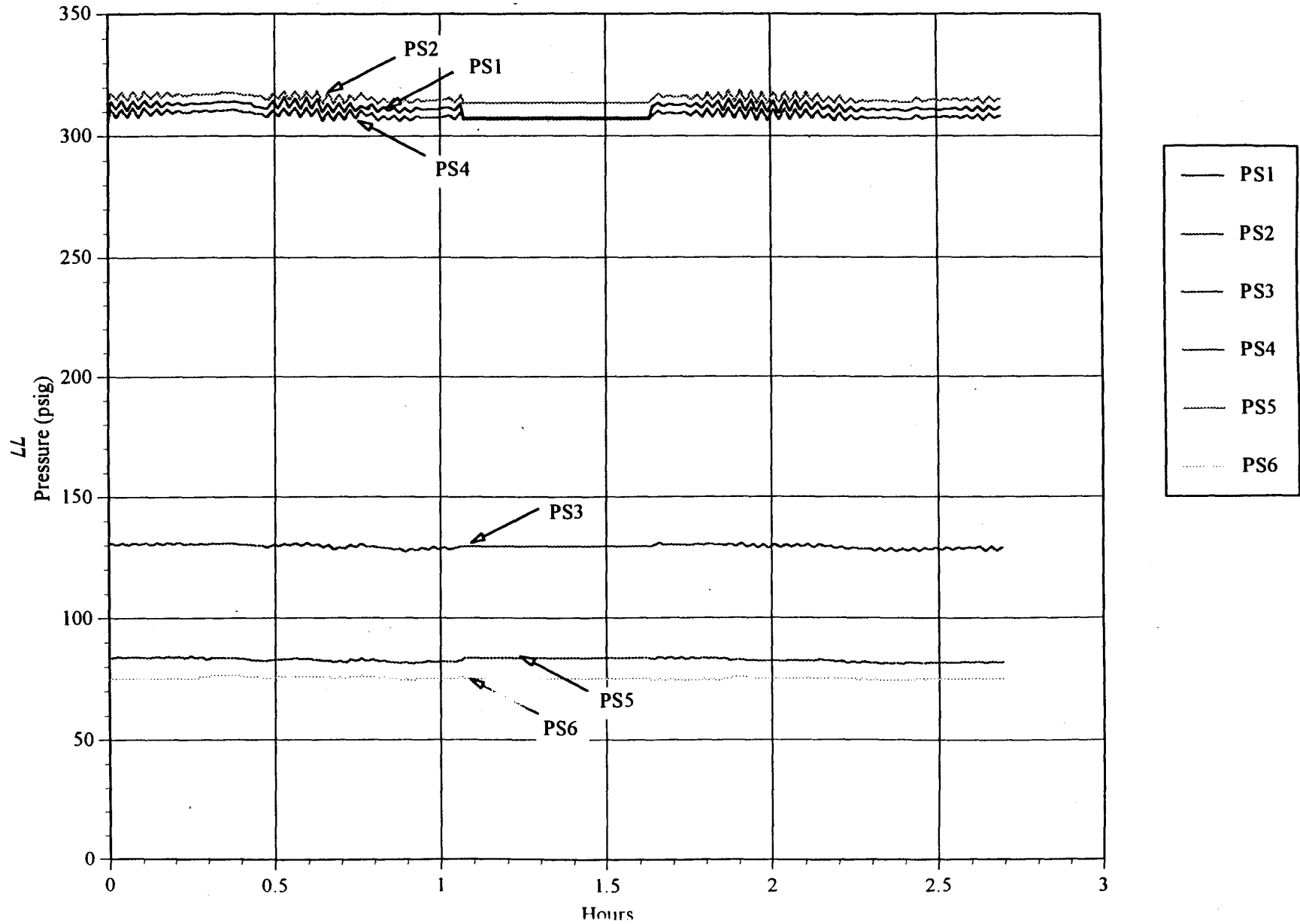


Heat Pump R407C - Castrol SW68 Oil Circulation Tests (15&16)

Cooling Mode - No Oil Injection

THS 2/29/96

System Pressures

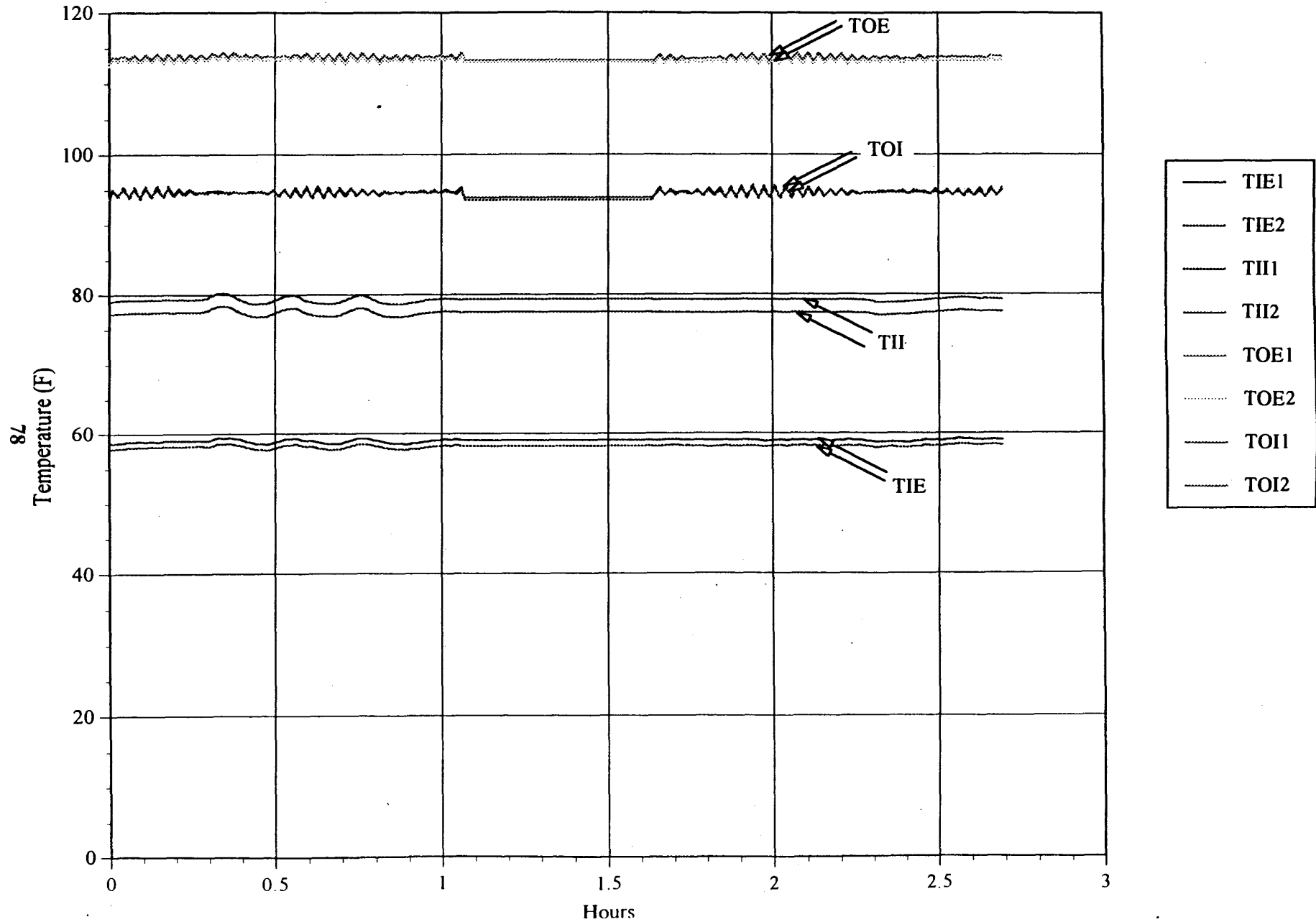


Heat Pump R407C - Castrol SW68 Oil Circulation Tests (15&16)

Cooling Mode - No Oil Injection

THS 2/29/96

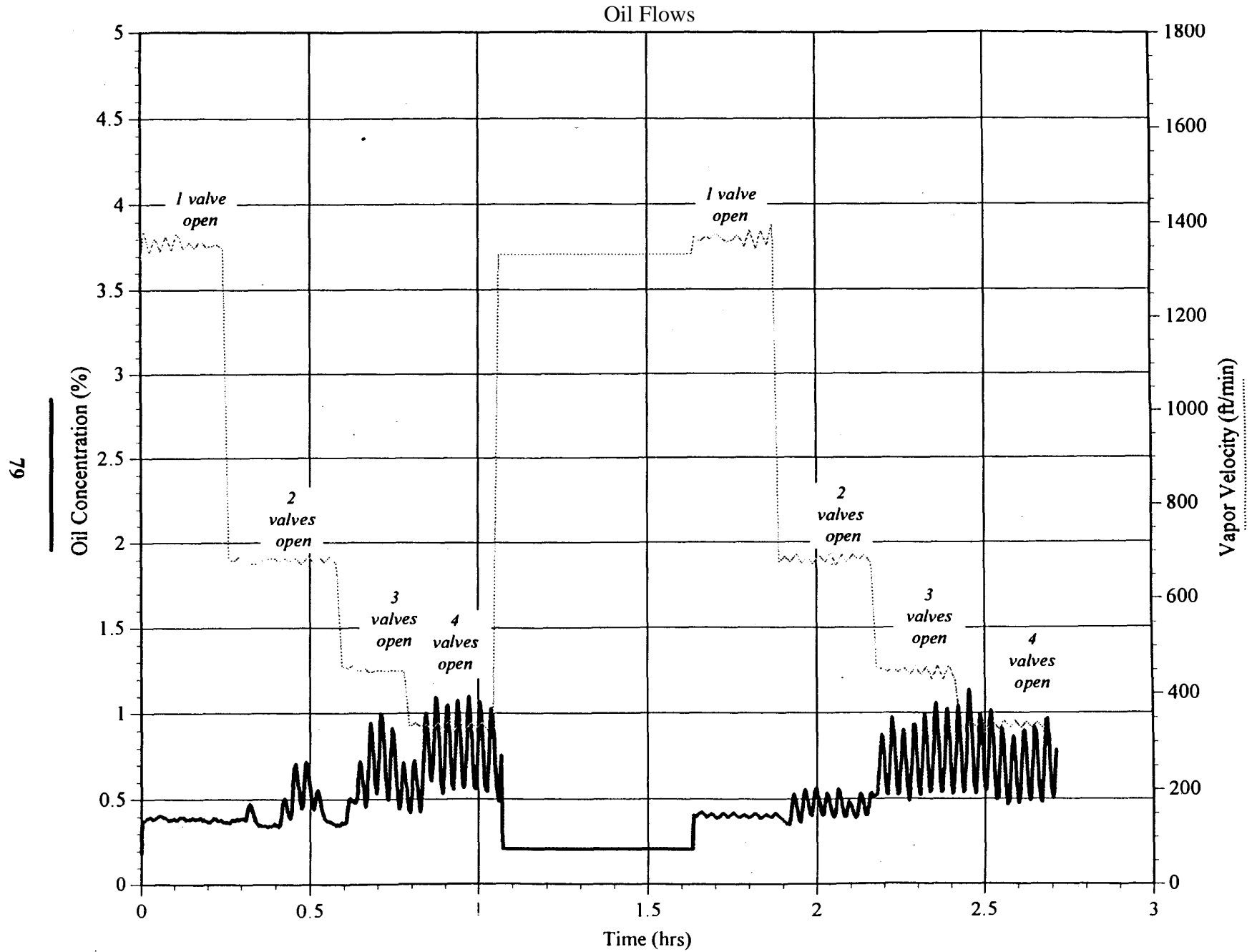
Air Side Temperatures



Heat Pump R407C- Castrol SW68 Oil Circulation Tests (15&16)

Cooling Mode - No Oil Injection

THS 2/29/96

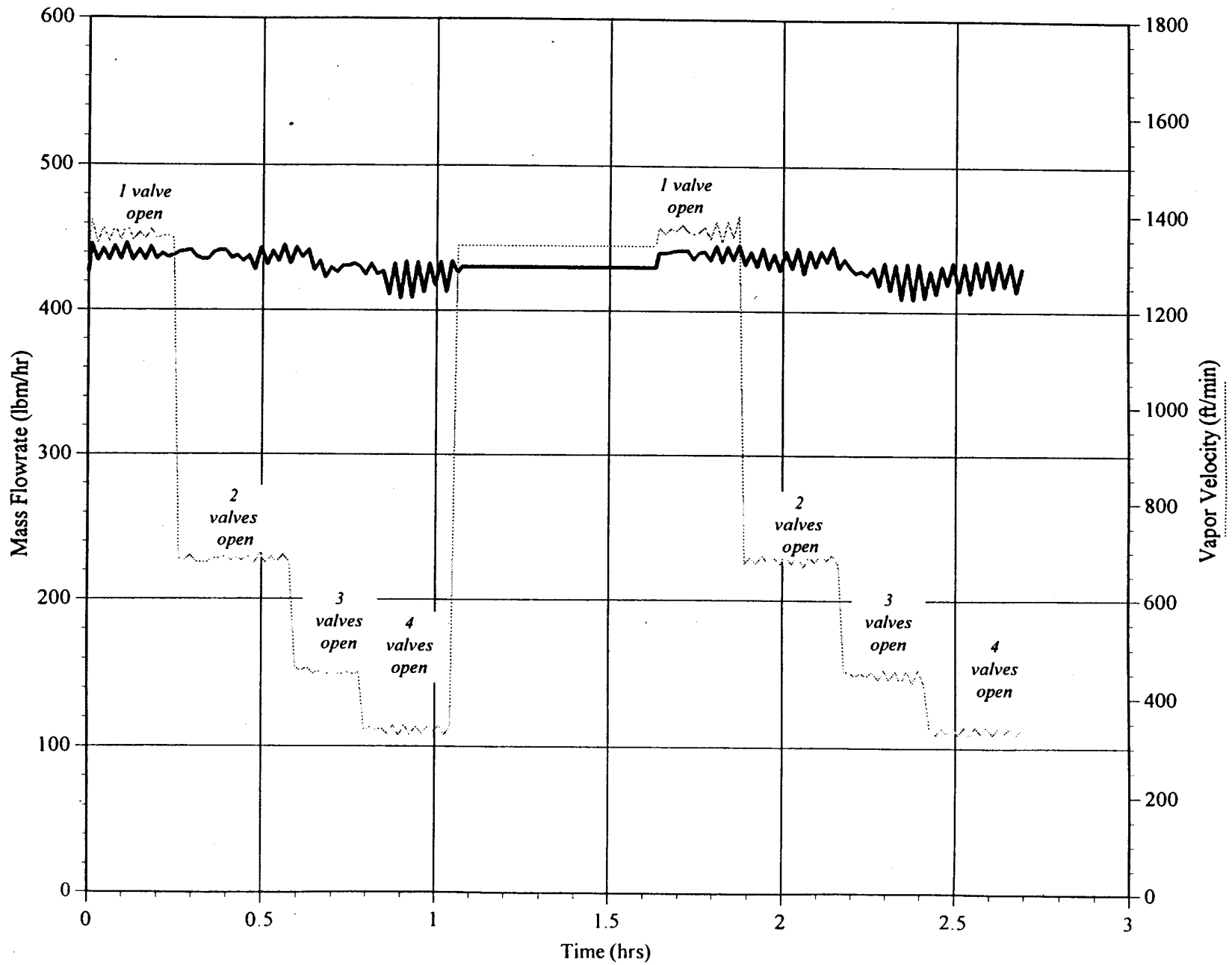


Heat Pump R407C - Castrol SW68 Oil Circulation Tests (15&16)

THS 2/29/96

Cooling Mode - No Oil Injection

08

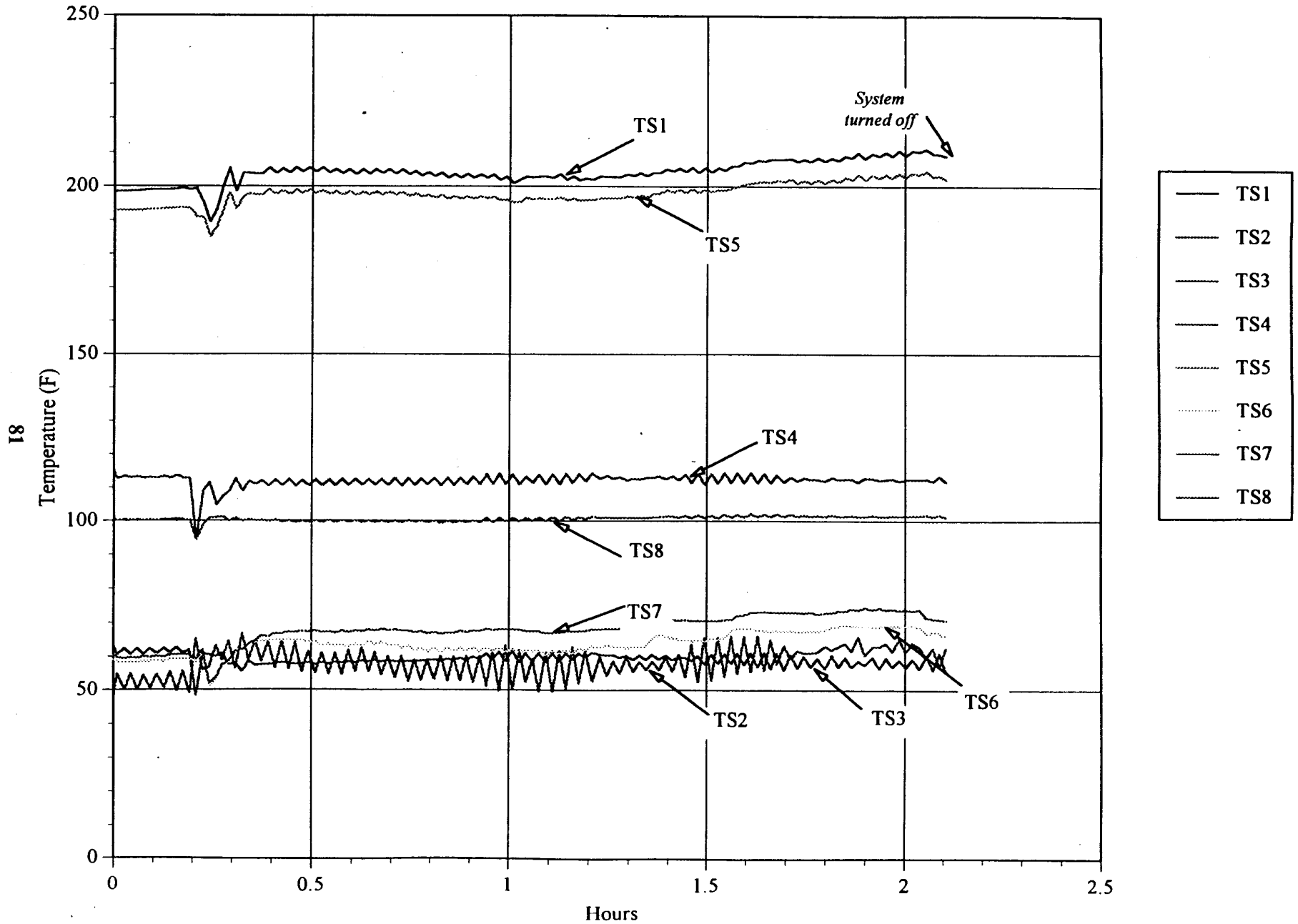


Heat Pump R407C- Castrol SW68 Oil Circulation Test (17)

Cooling Mode - Oil Injection

SLO 2/8/96

System Temperatures

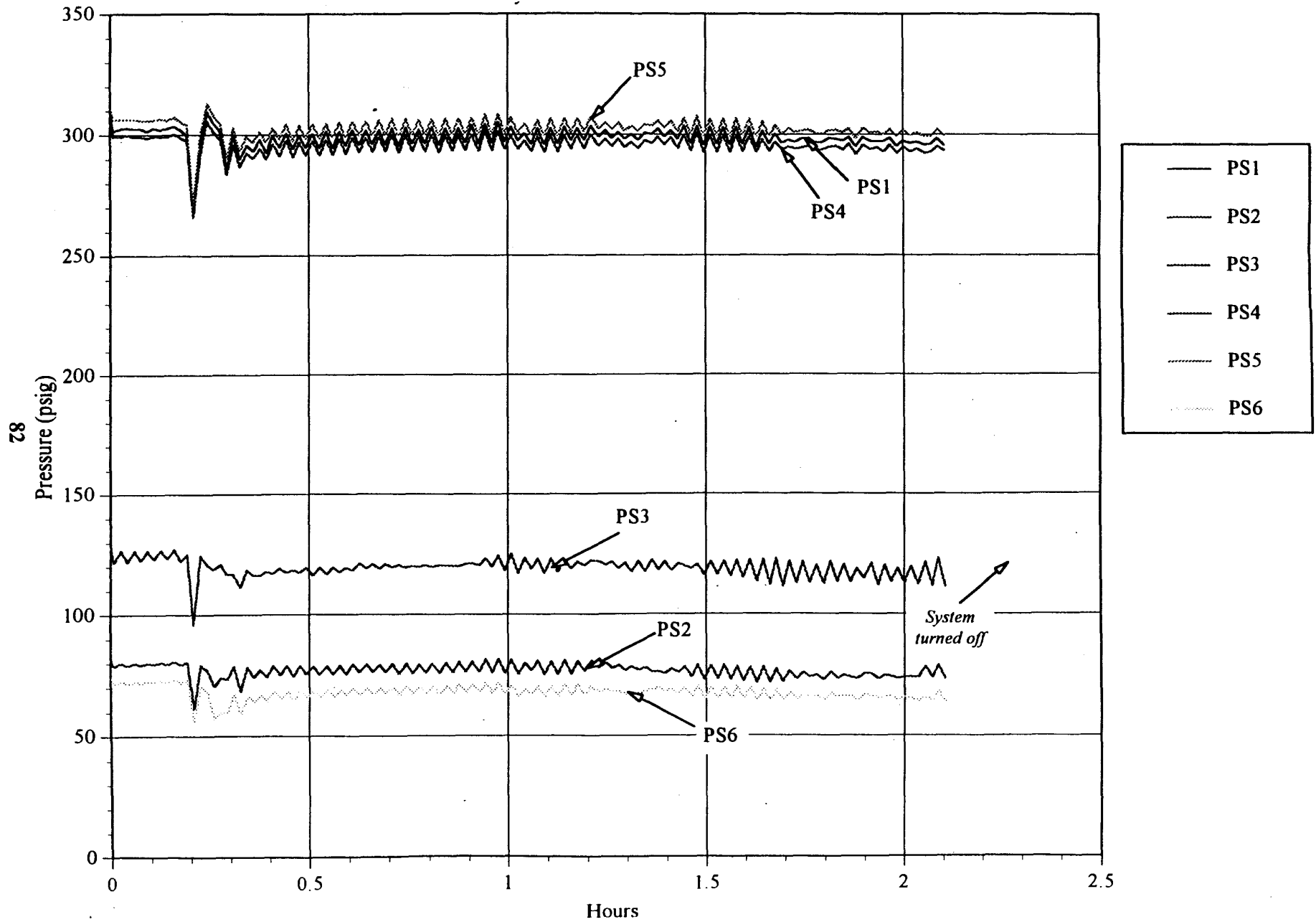


Heat Pump R407C- Castrol SW68 Oil Circulation Test (17)

Cooling Mode - Oil Injection

SLO 2/8/96

System Pressures

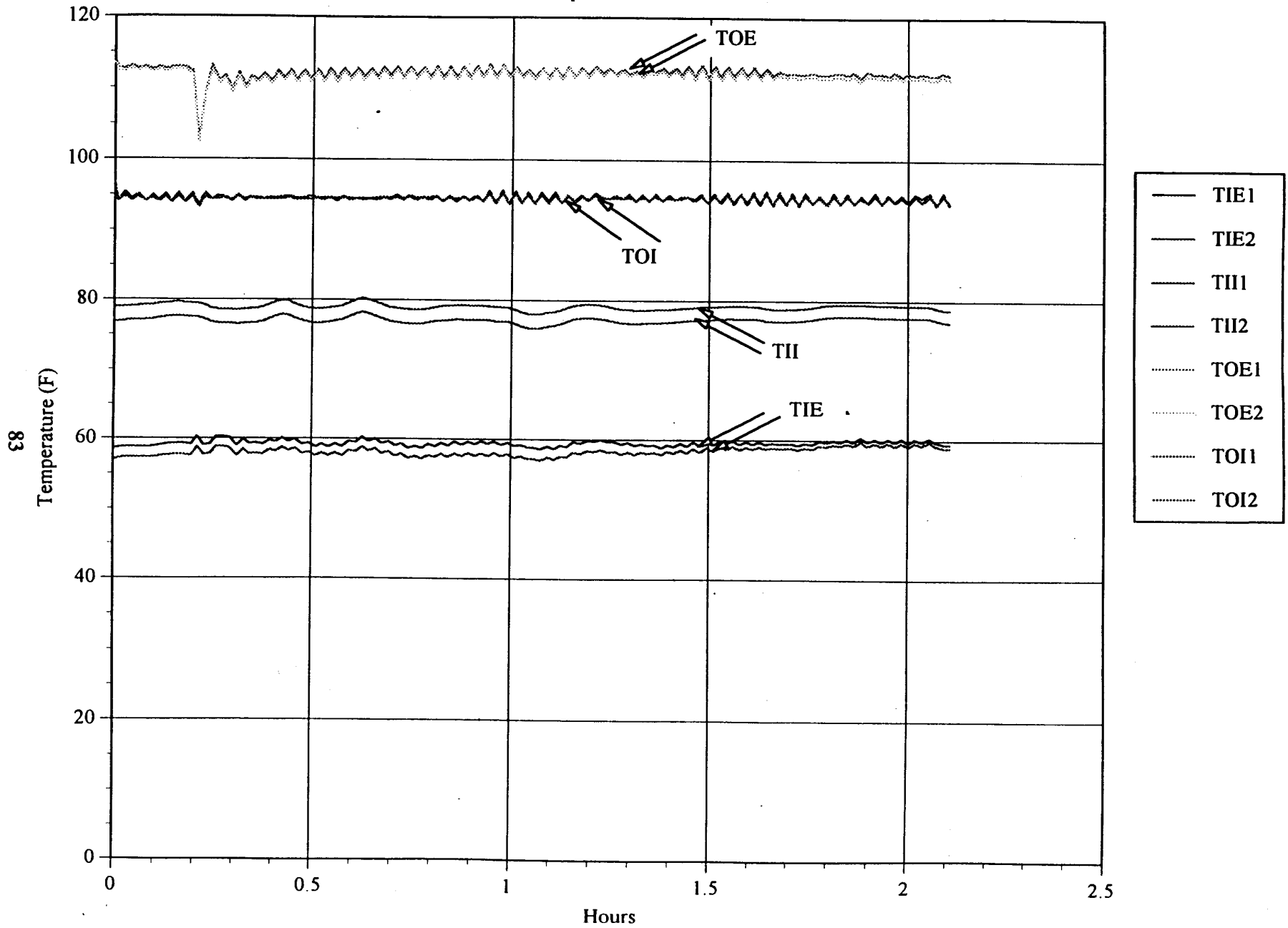


Heat Pump R407C-Castrol SW68 Oil Circulation Test (17)

Cooling Mode - Oil Injection

SLO 2/8/96

Air Side Temperatures

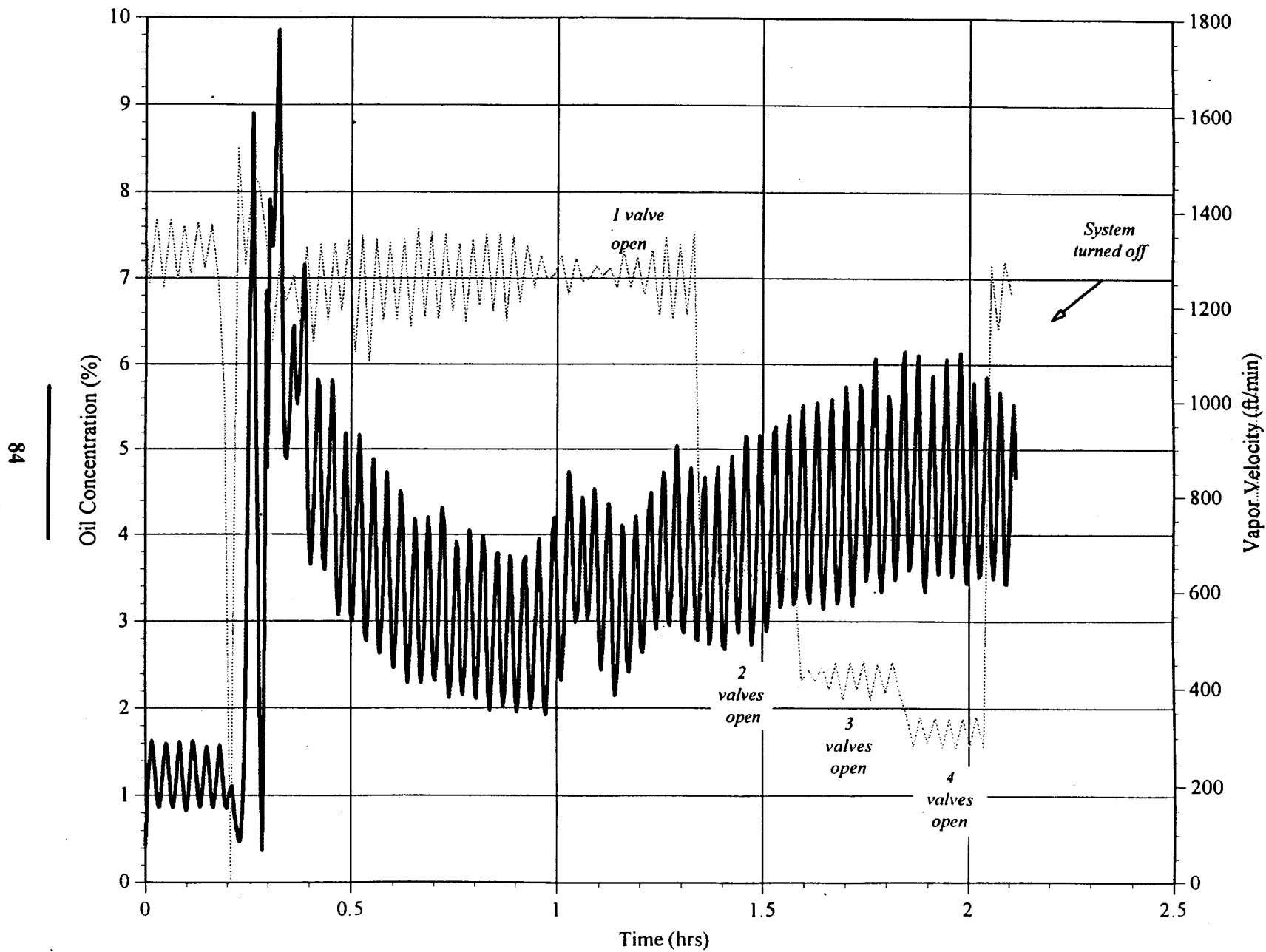


Heat Pump R407C- Castrol SW68 Oil Circulation Test (17)

Cooling Mode - Oil Injection

SLO 2/8/96

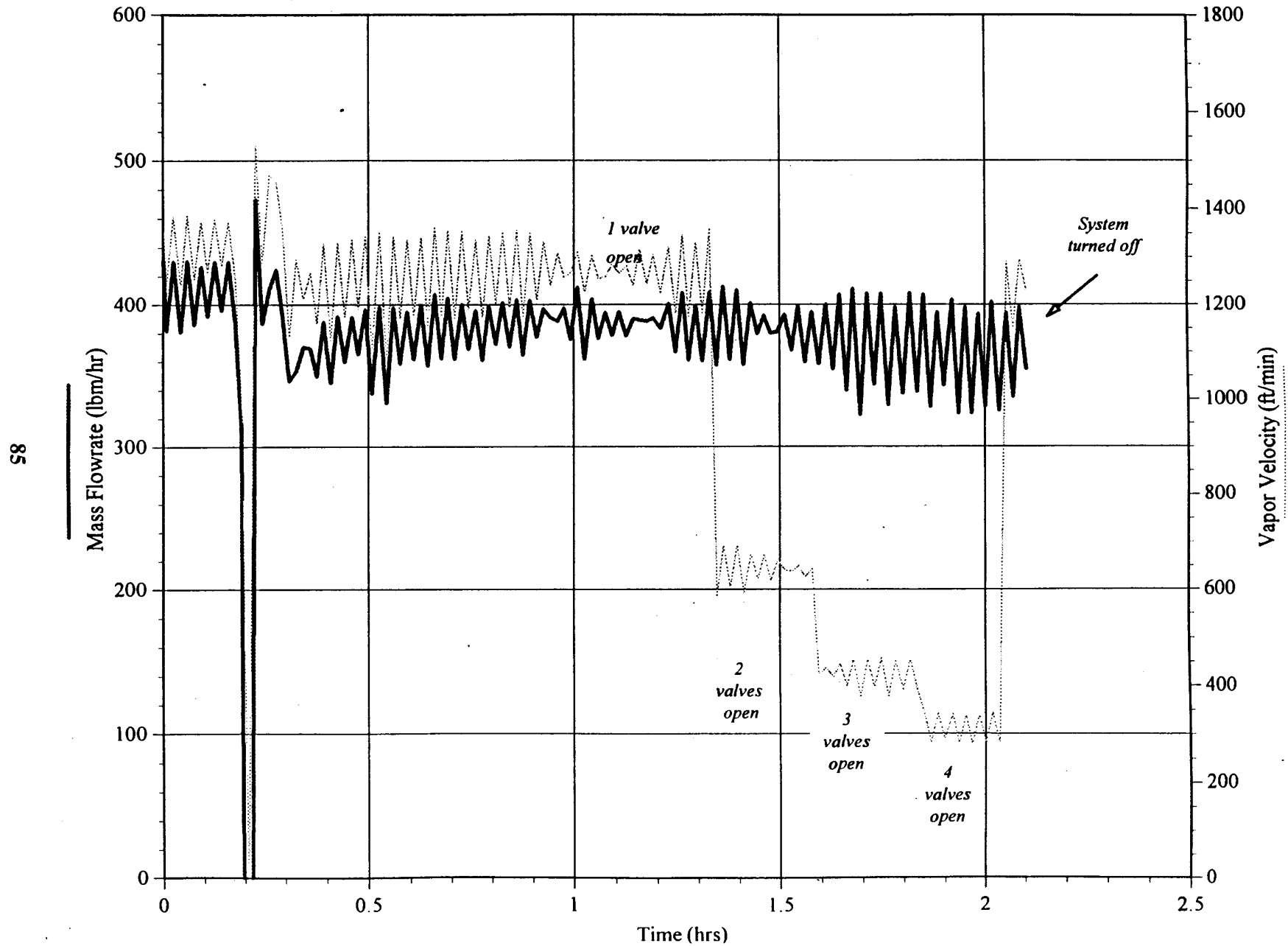
Oil Flows



Heat Pump R407C- Castrol SW68 Oil Circulation Test (17)

SLO 2/8/96

Cooling Mode - Oil Injection

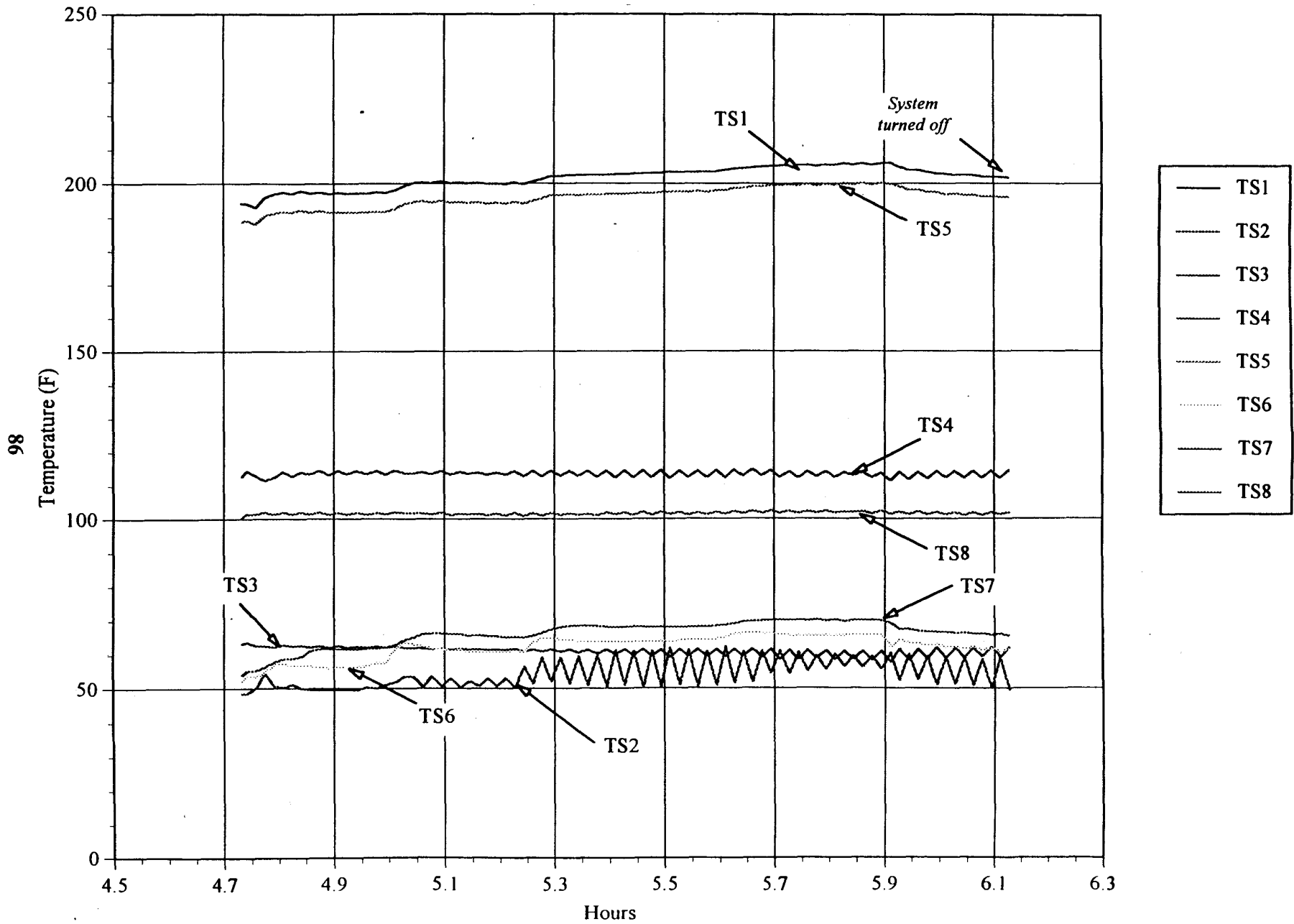


Heat Pump R407C - Castrol SW68 Oil Circulation Test (18)

Cooling Mode - Oil Injection

SLO 2/8/96

System Temperatures

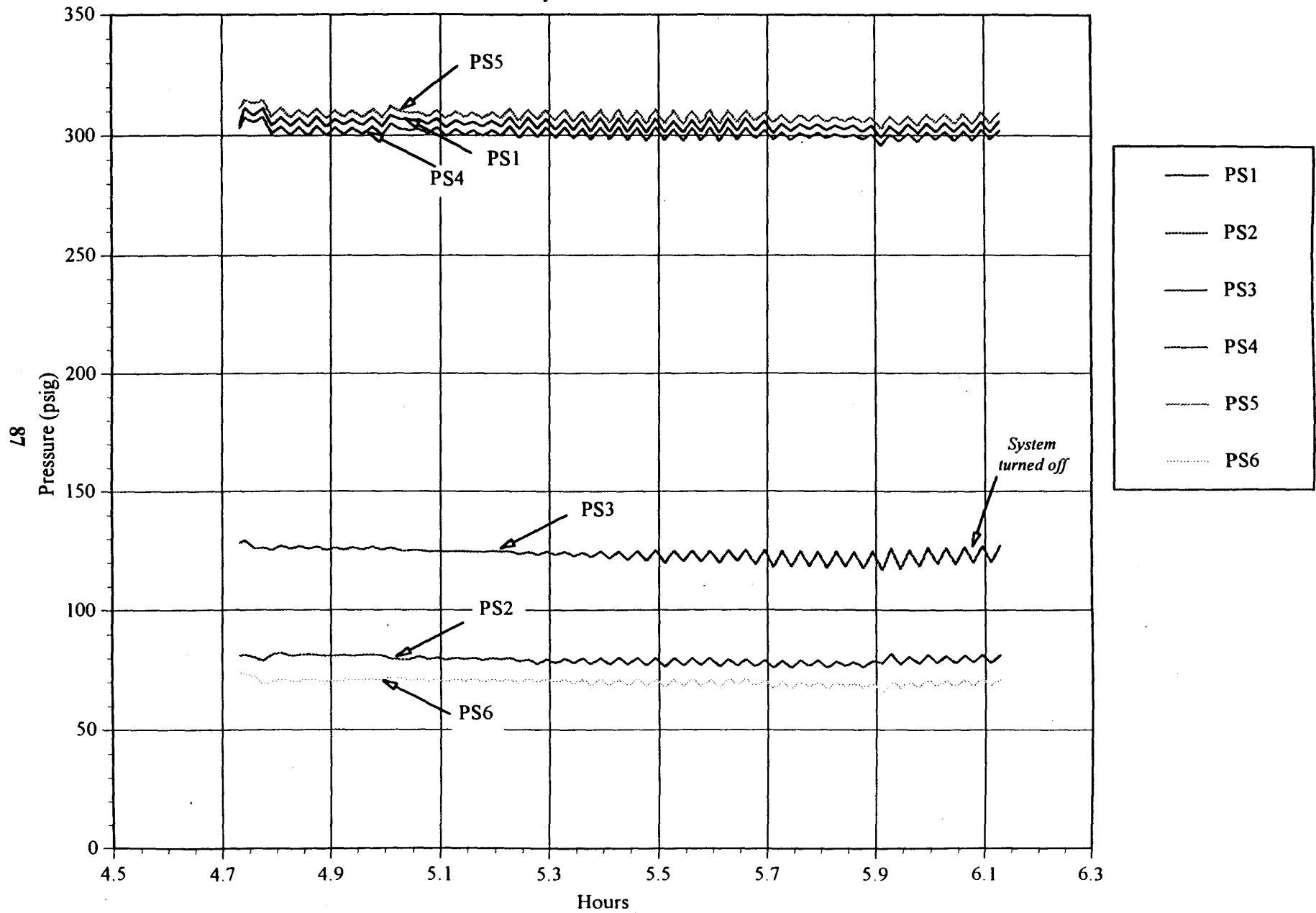


Heat Pump R407C - Castrol SW68 Oil Circulation Test (18)

Cooling Mode - Oil Injection

SLO 2/8/96

System Pressures

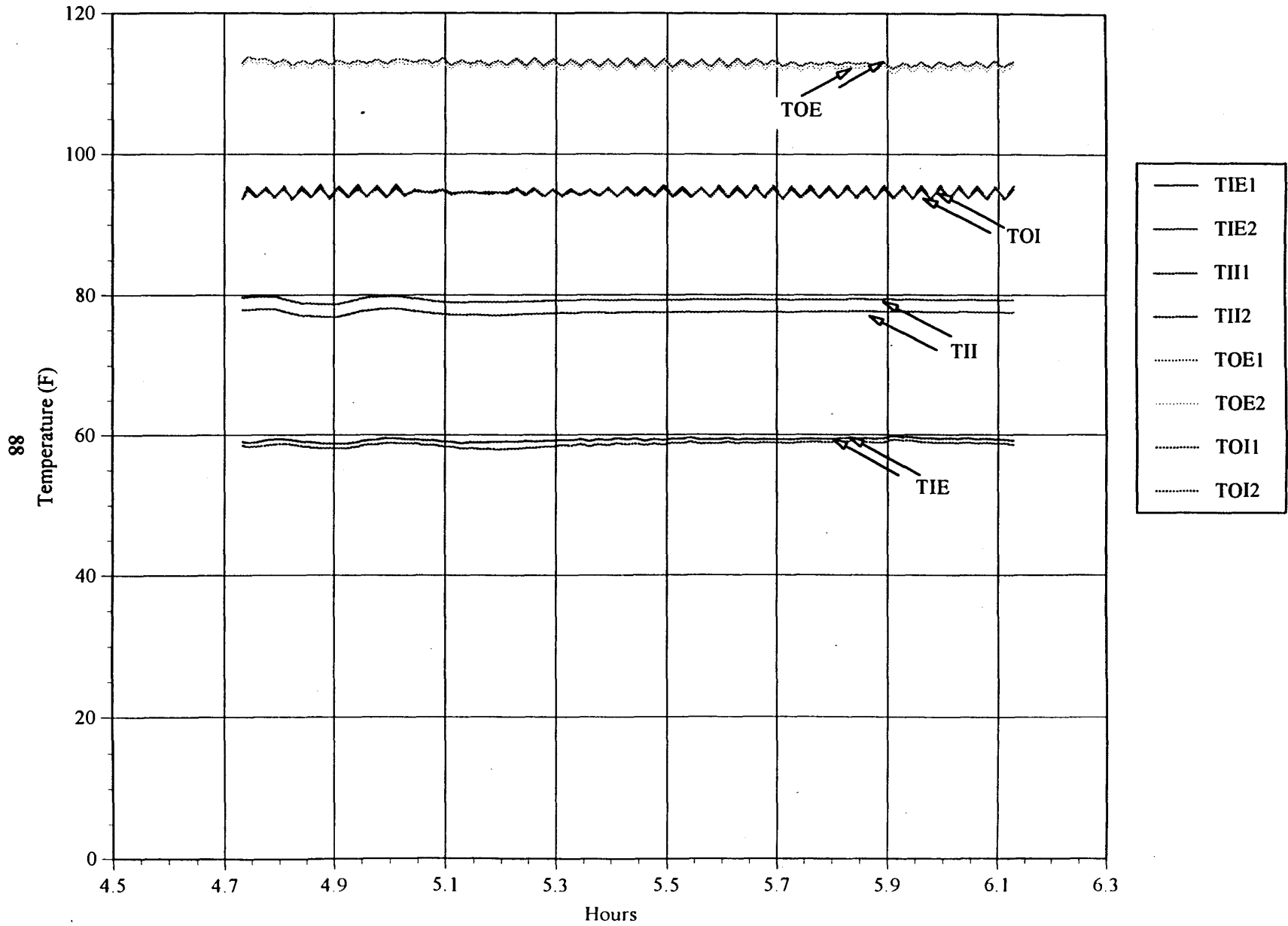


Heat Pump R407C- Castrol SW68 Oil Circulation Test (18)

SLO 2/8/96

Cooling Mode - Oil Injection

Air Side Temperatures



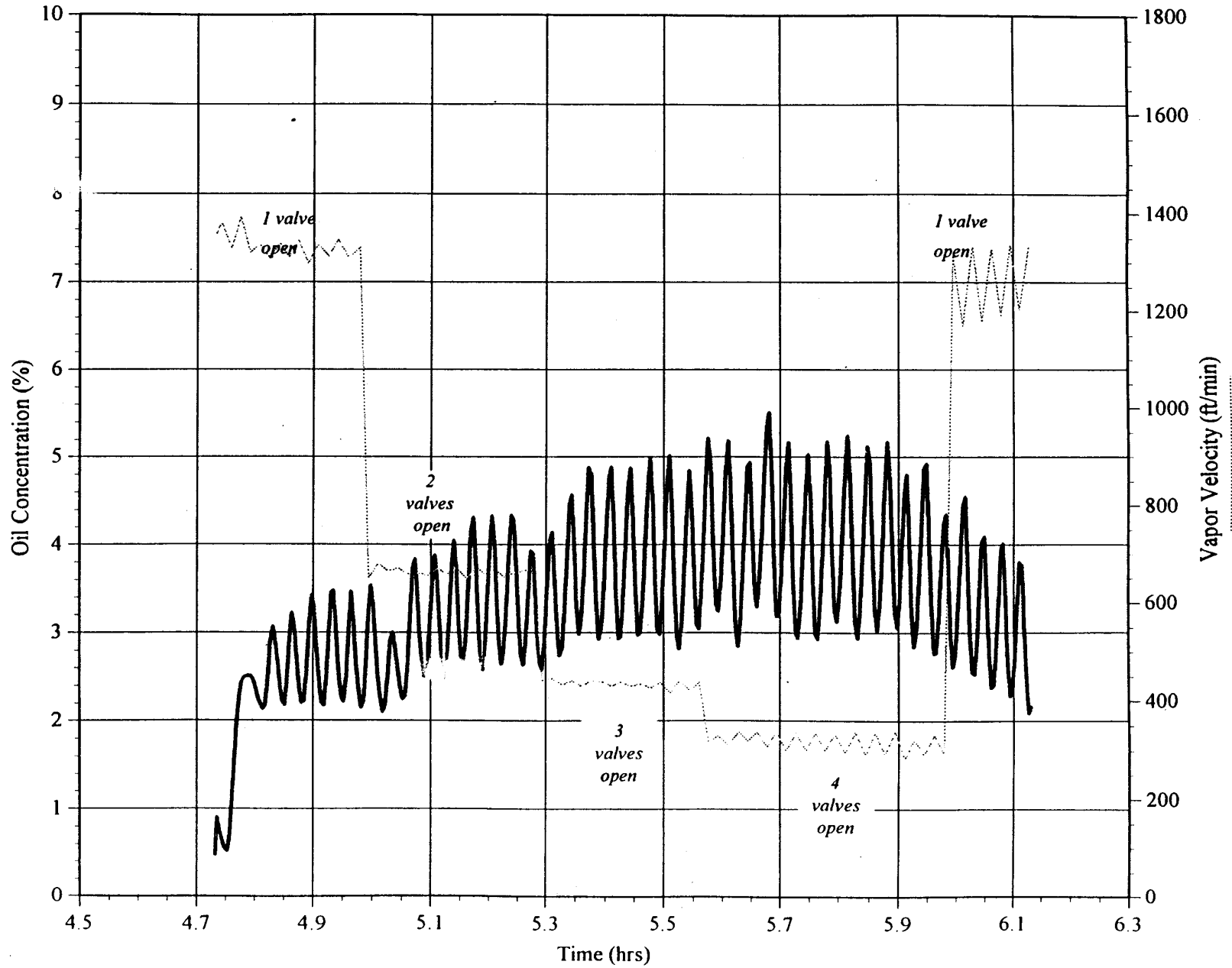
Heat Pump R407C - Castrol SW68 Oil Circulation Test (18)

Cooling Mode - Oil Injection

SLO 2/8/96

Oil Flows

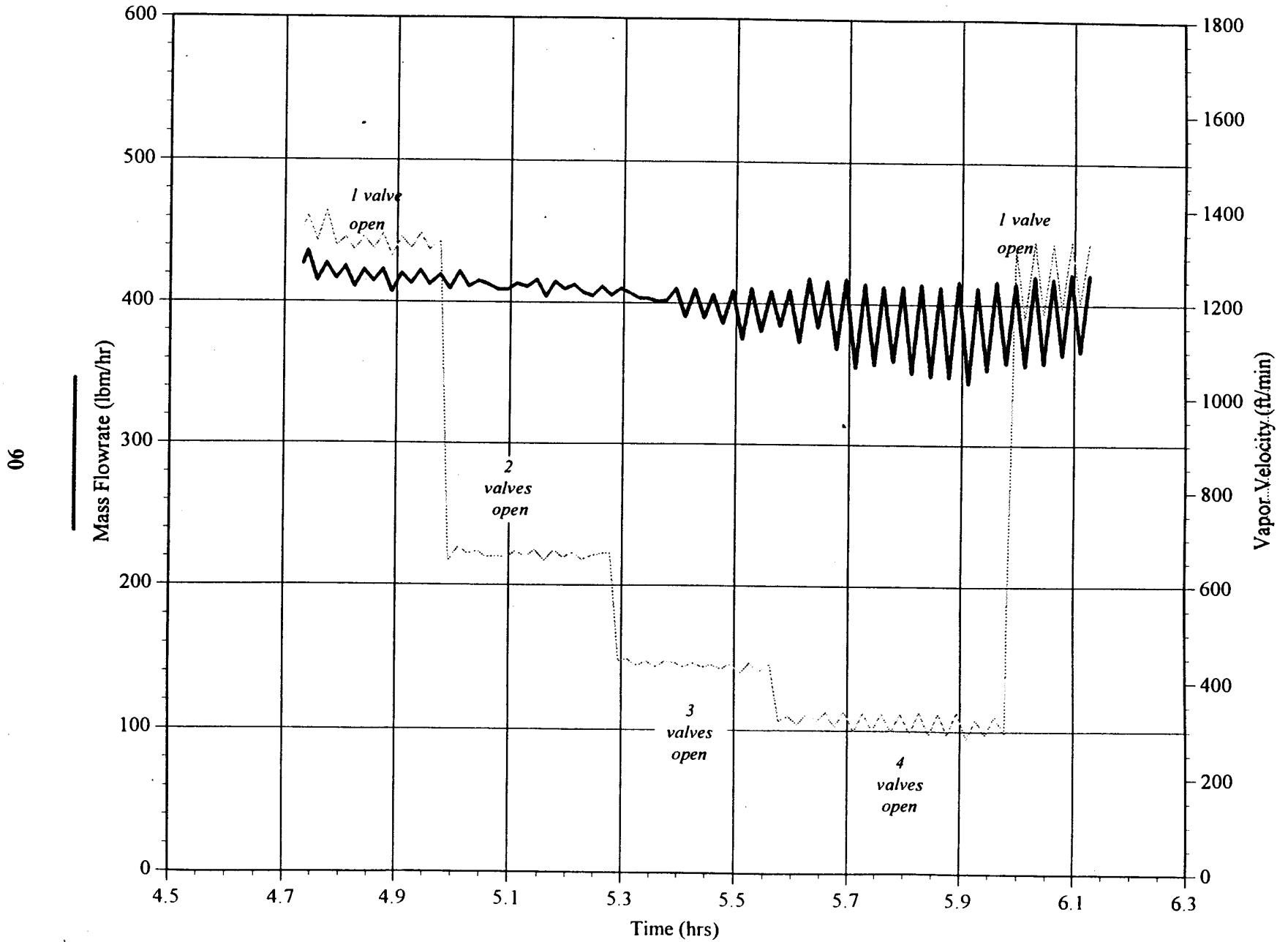
68



Heat Pump R407C- Castrol SW68 Oil Circulation Test (18)

SLO 2/8/96

Cooling Mode - Oil Injection

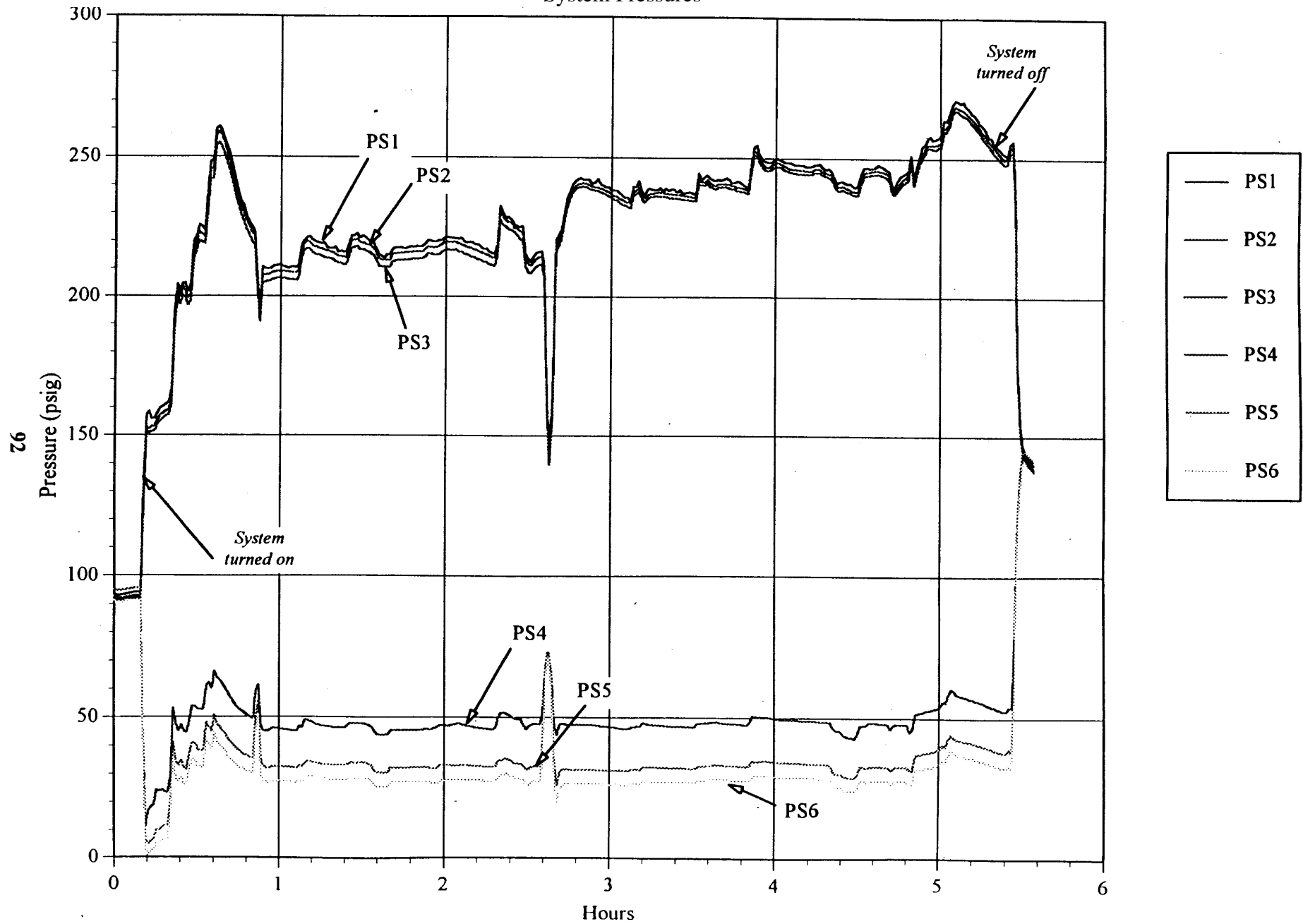


Heat Pump R407C-Castrol SW68 Oil Circulation Tests (19&20)

Heating Mode - No Oil Injection

SLO 2/9/96

System Pressures

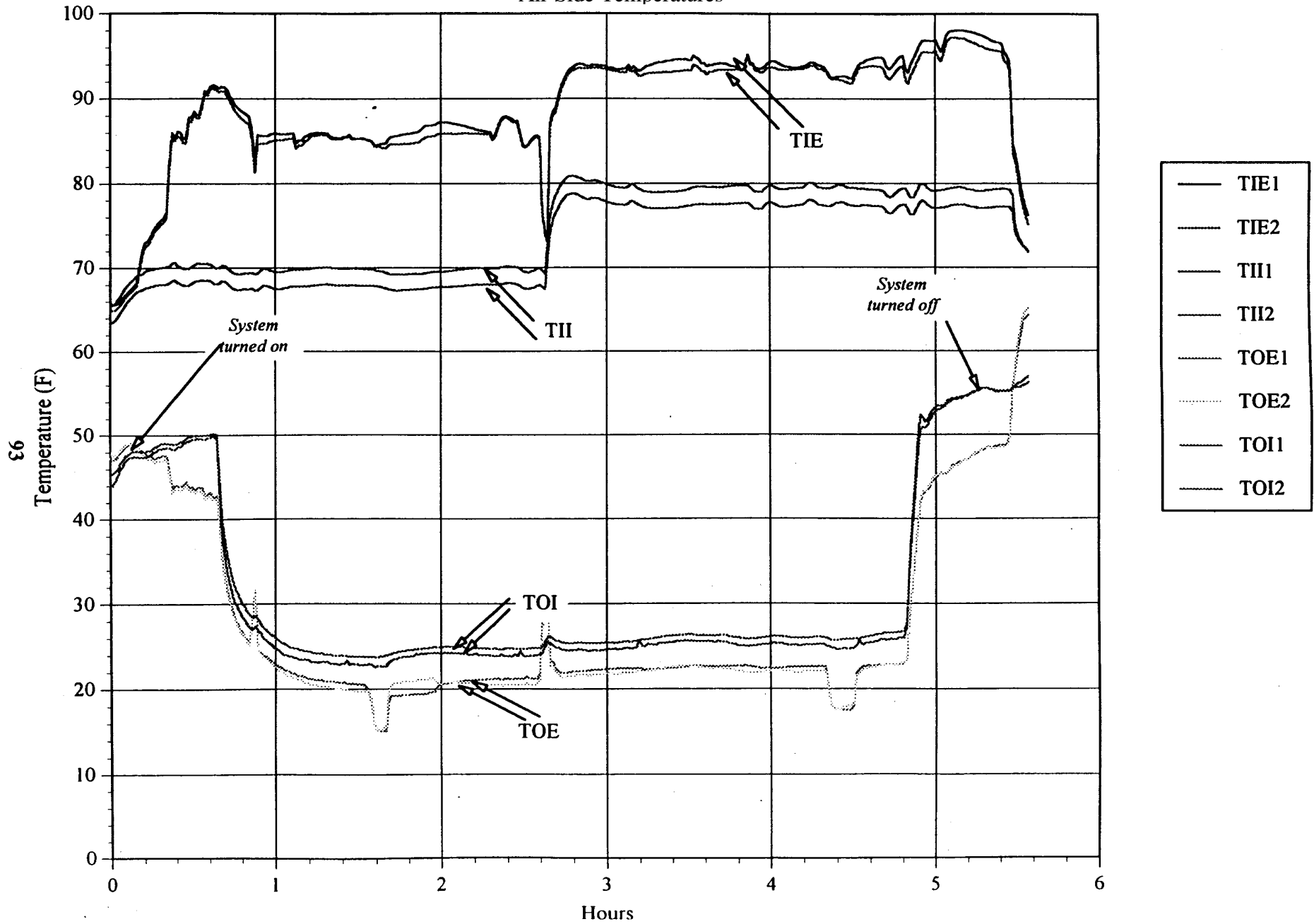


Heat Pump R407C-Castrol SW68 Oil Circulation Tests (19&20)

SLO 2/9/96

Heating Mode - No Oil Injection

Air Side Temperatures

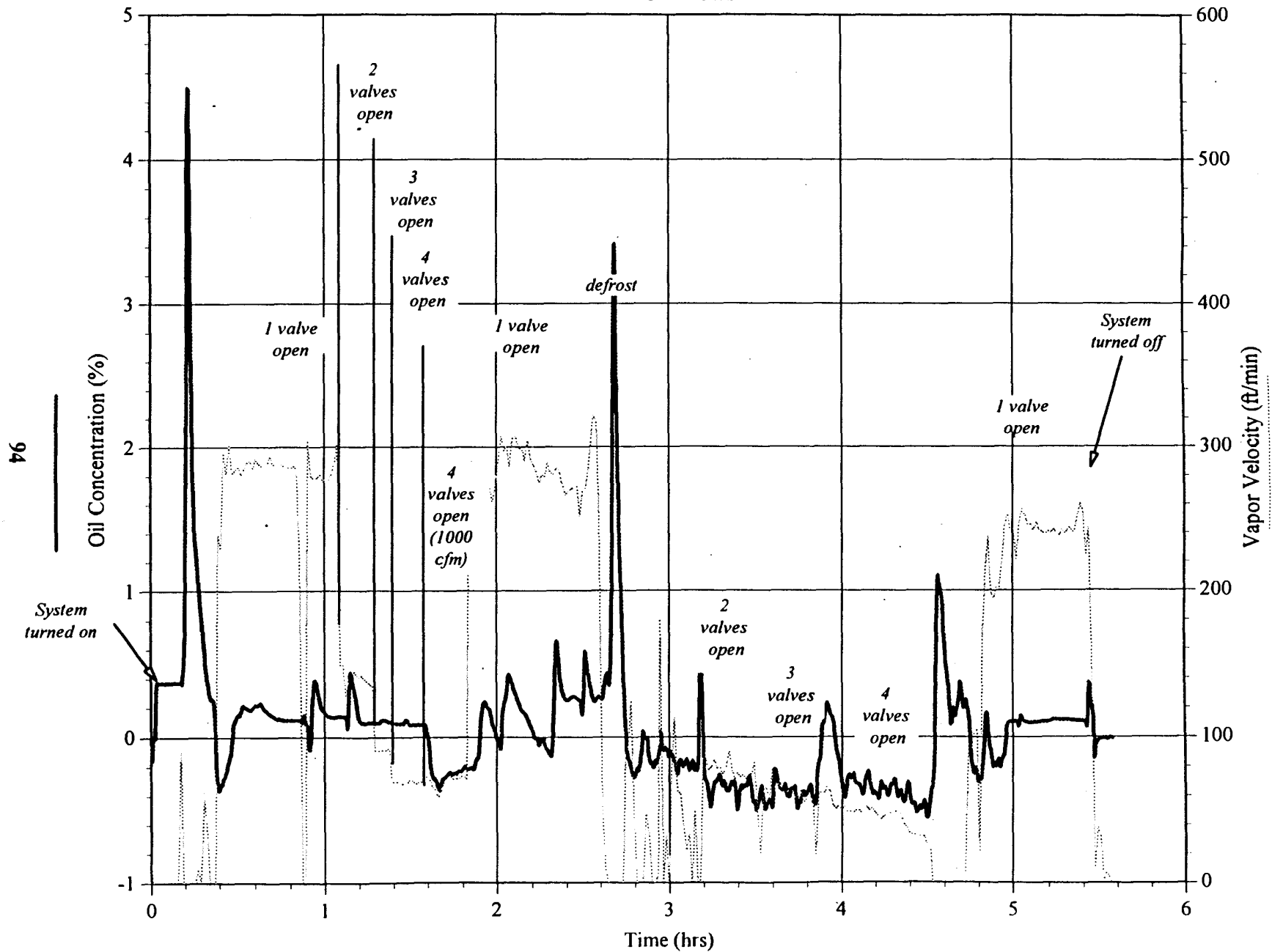


Heat Pump R407C-Castrol SW68 Oil Circulation Tests (19&20)

Heating Mode – No Oil Injection

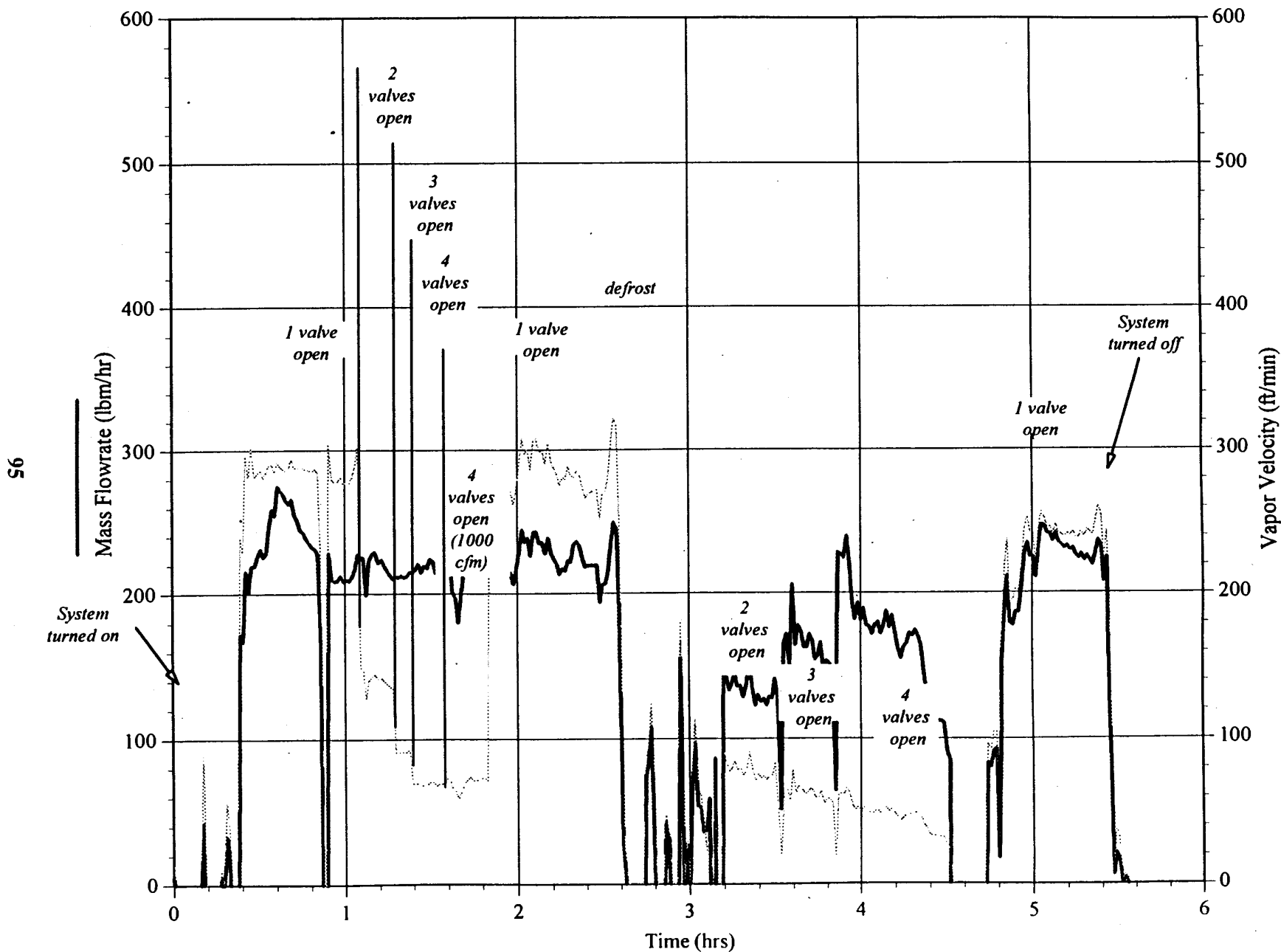
SLO 2/9/96

Oil Flows



Heat Pump R407C-Castrol SW68 Oil Circulation Tests (19&20)

Heating Mode - No Oil Injection

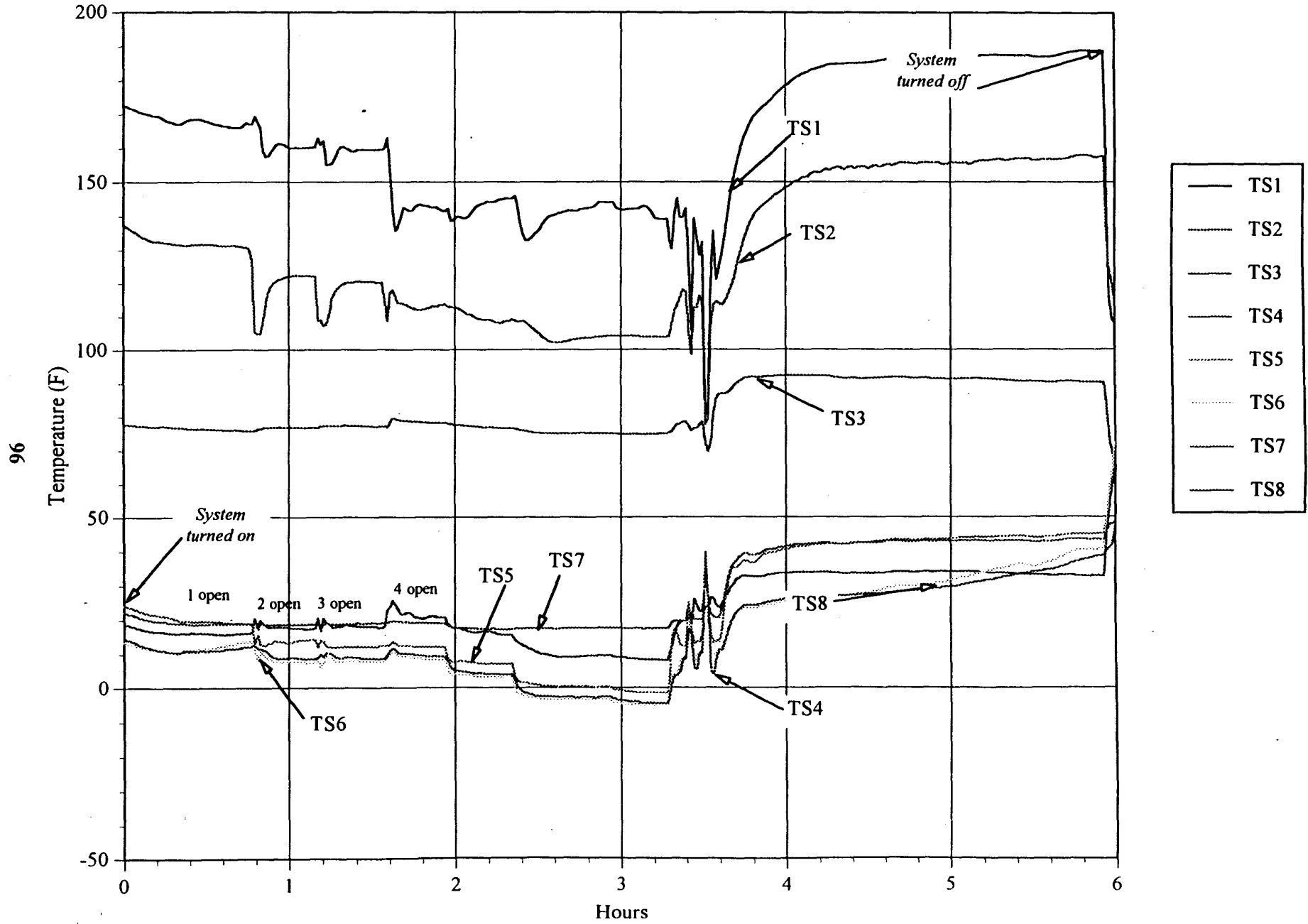


Heat Pump R407C-Castrol SW68 Oil Circulation Test (21)

SLO 2/12/96

Heating Mode - Oil Injection

System Temperatures

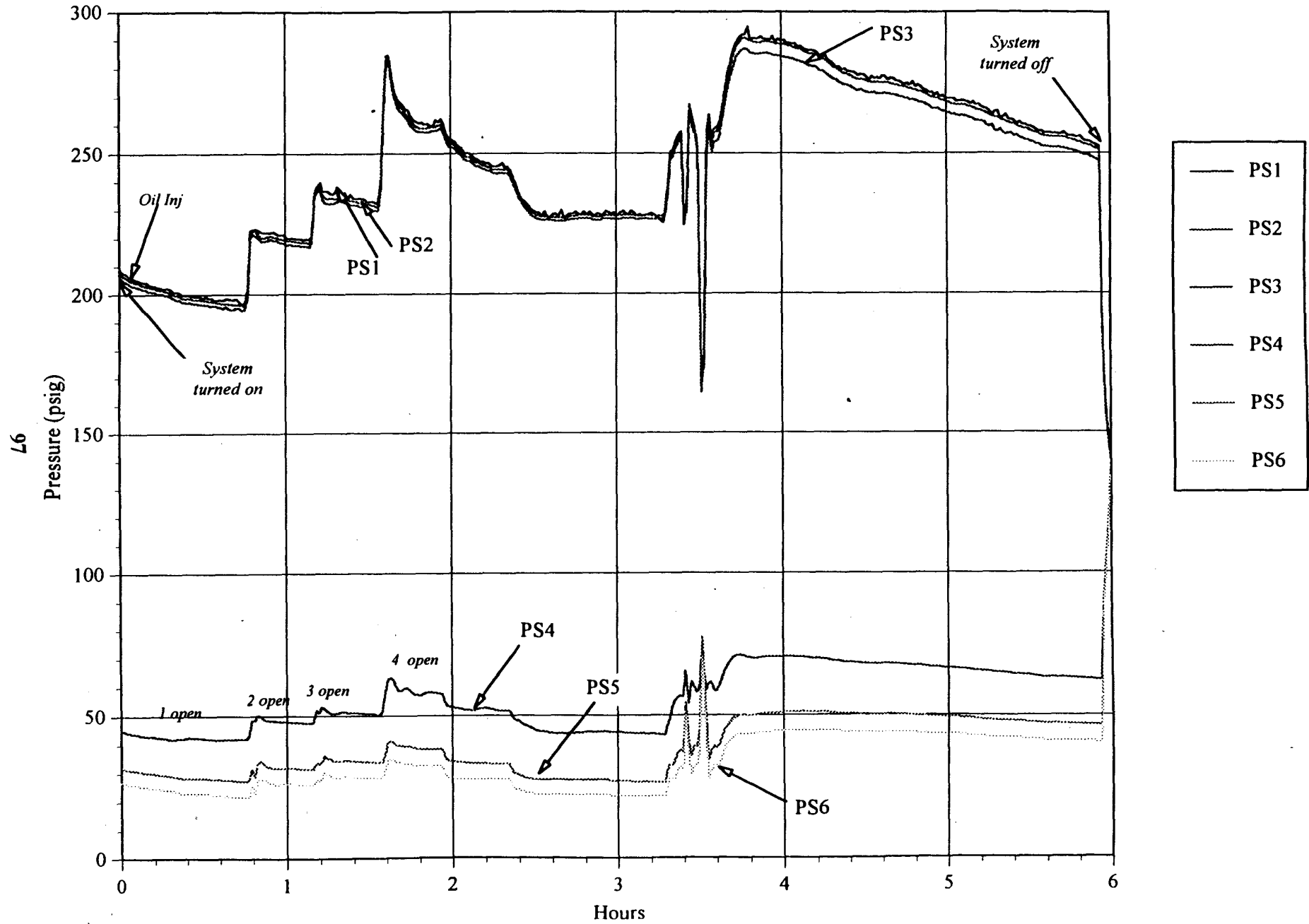


Heat Pump R407C-Castrol SW68 Oil Circulation Test (21)

Heating Mode - Oil Injection

SLO 2/12/96

System Pressures

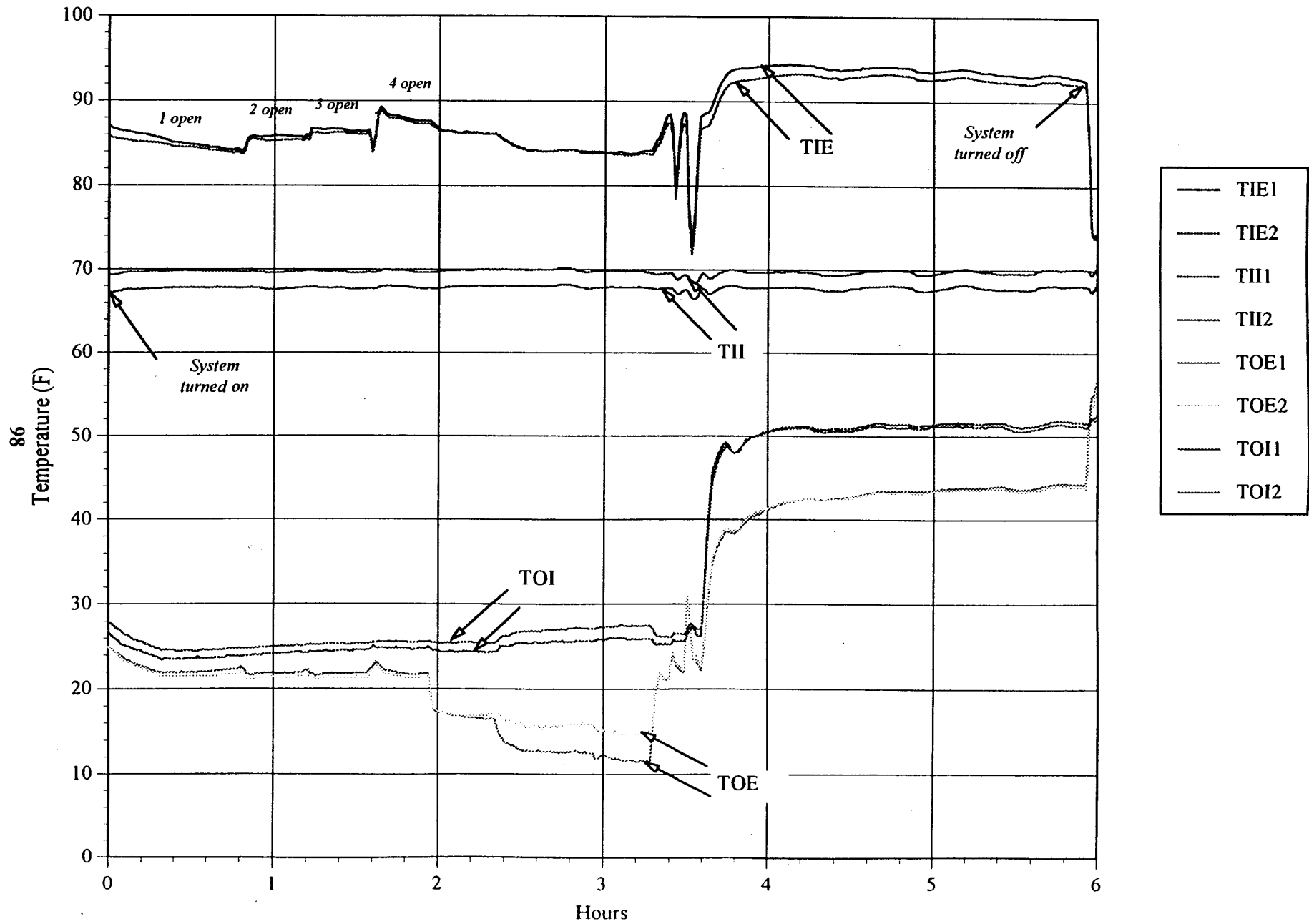


Heat Pump R407C-Castrol SW68 Oil Circulation Test (21)

SLO 2/12/96

Heating Mode - Oil Injection

Air Side Temperatures

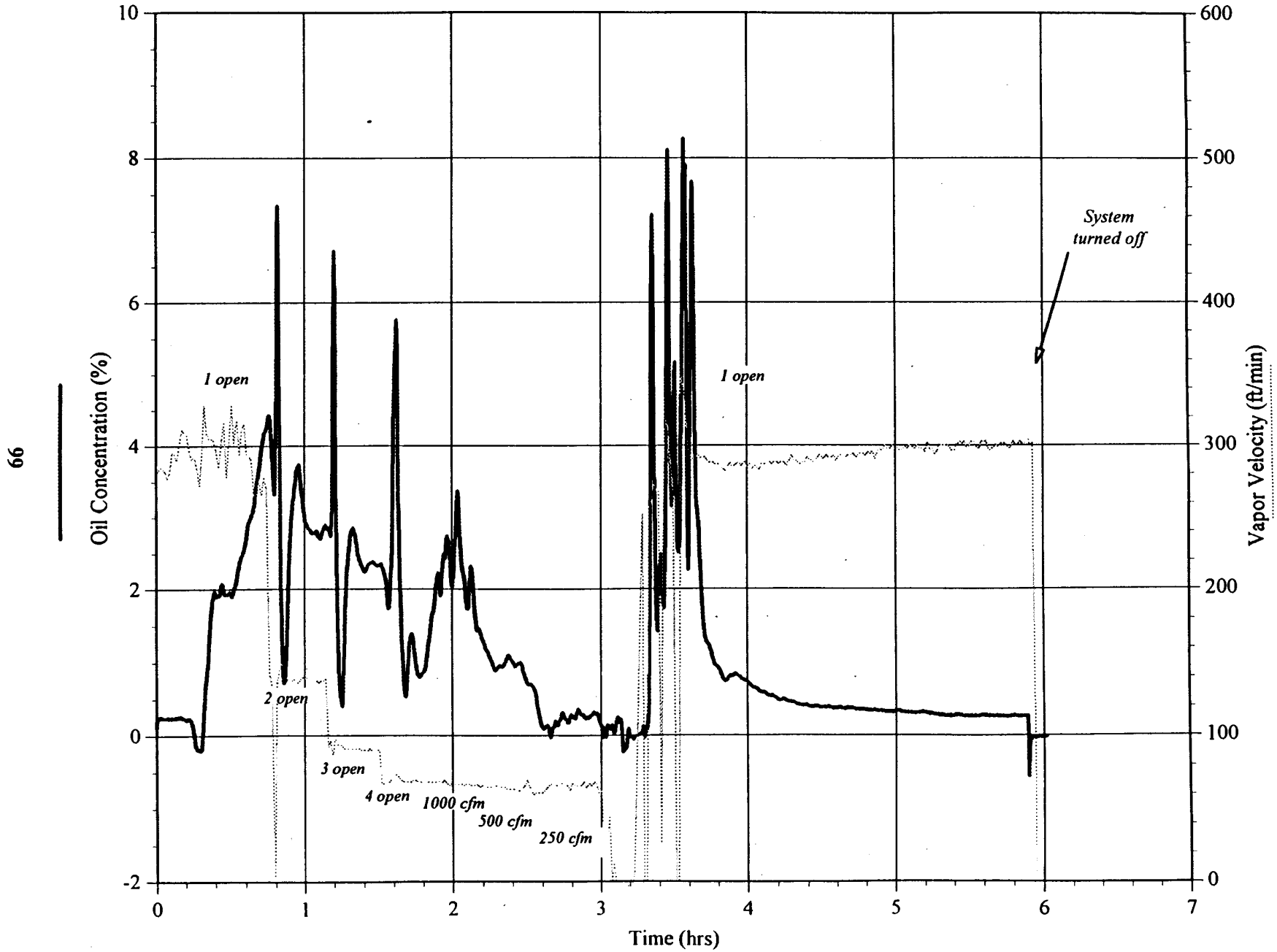


Heat Pump R407C-Castrol SW68 Oil Circulation Test (21)

SLO 2/12/96

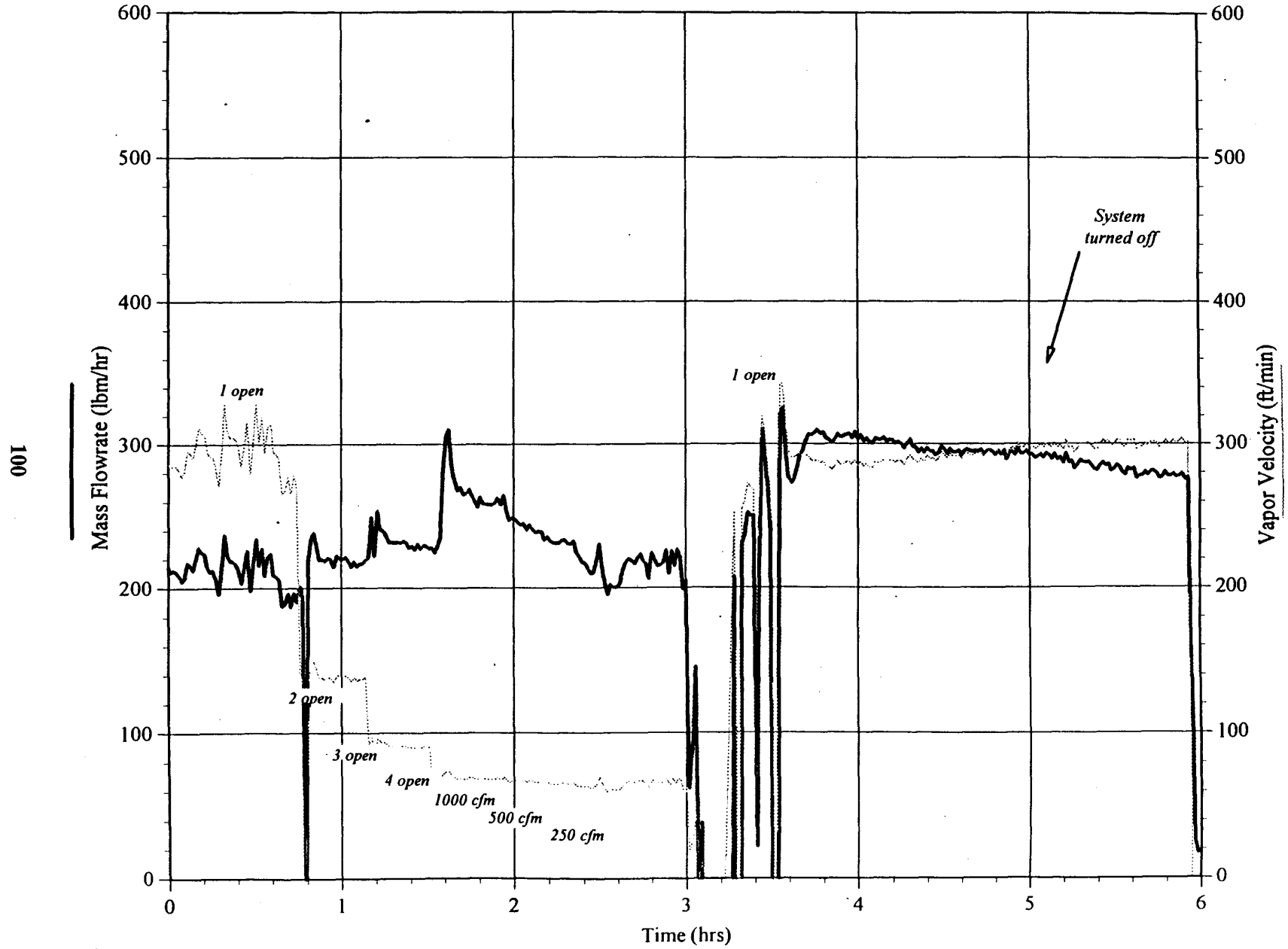
Heating Mode - Oil Injection

Oil Flows



Heat Pump R407C-Castrol SW68 Oil Circulation Test (21)

Heating Mode - Oil Injection

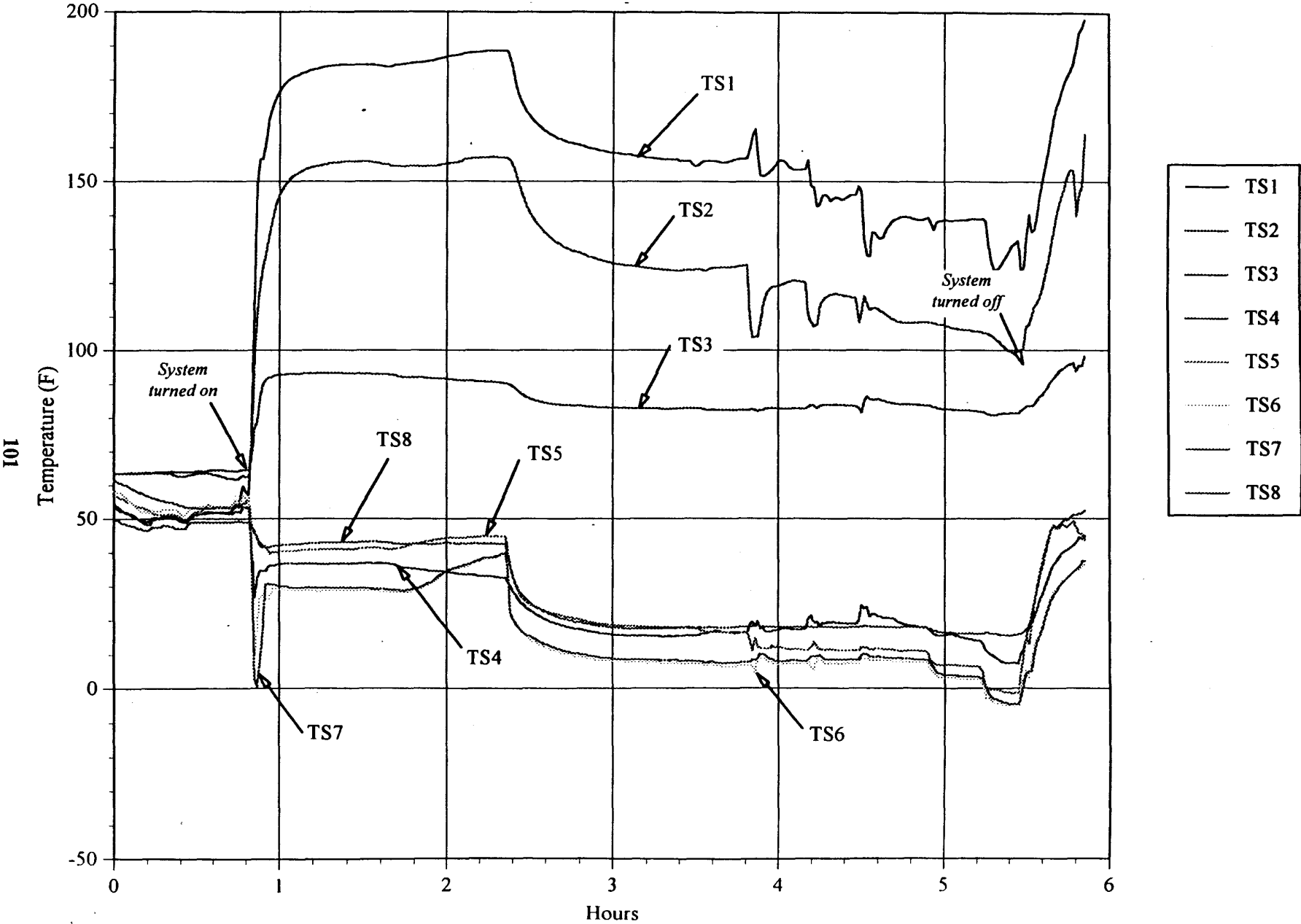


Heat Pump R407C-Castrol SW68 Oil Circulation Test (22)

SLO 2/13/96

Heating Mode - Oil Injection

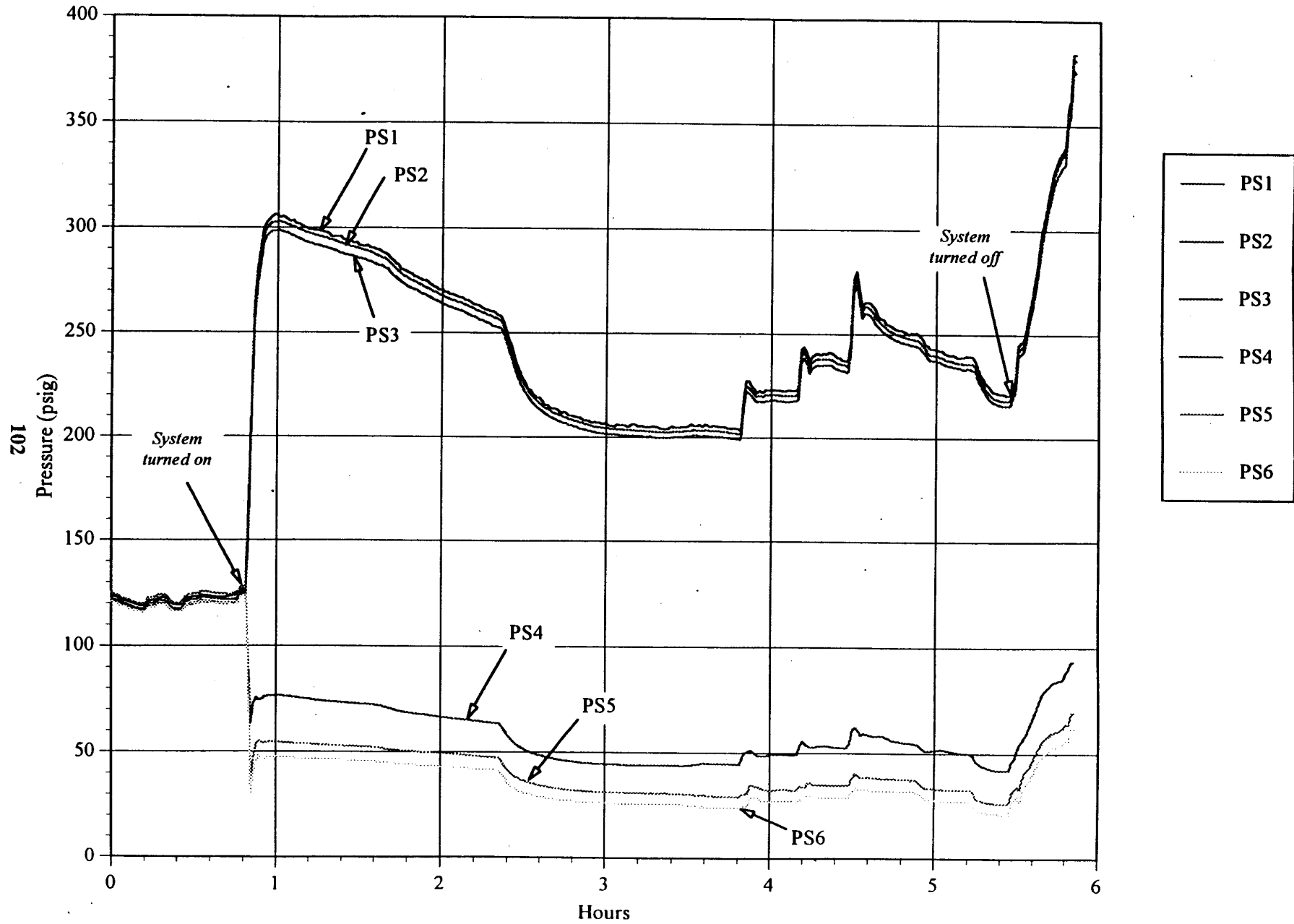
System Temperatures



Heat Pump R407C-Castrol SW68 Oil Circulation Test (22)

SLO 2/13/96

Heating Mode - Oil Injection
System Pressures

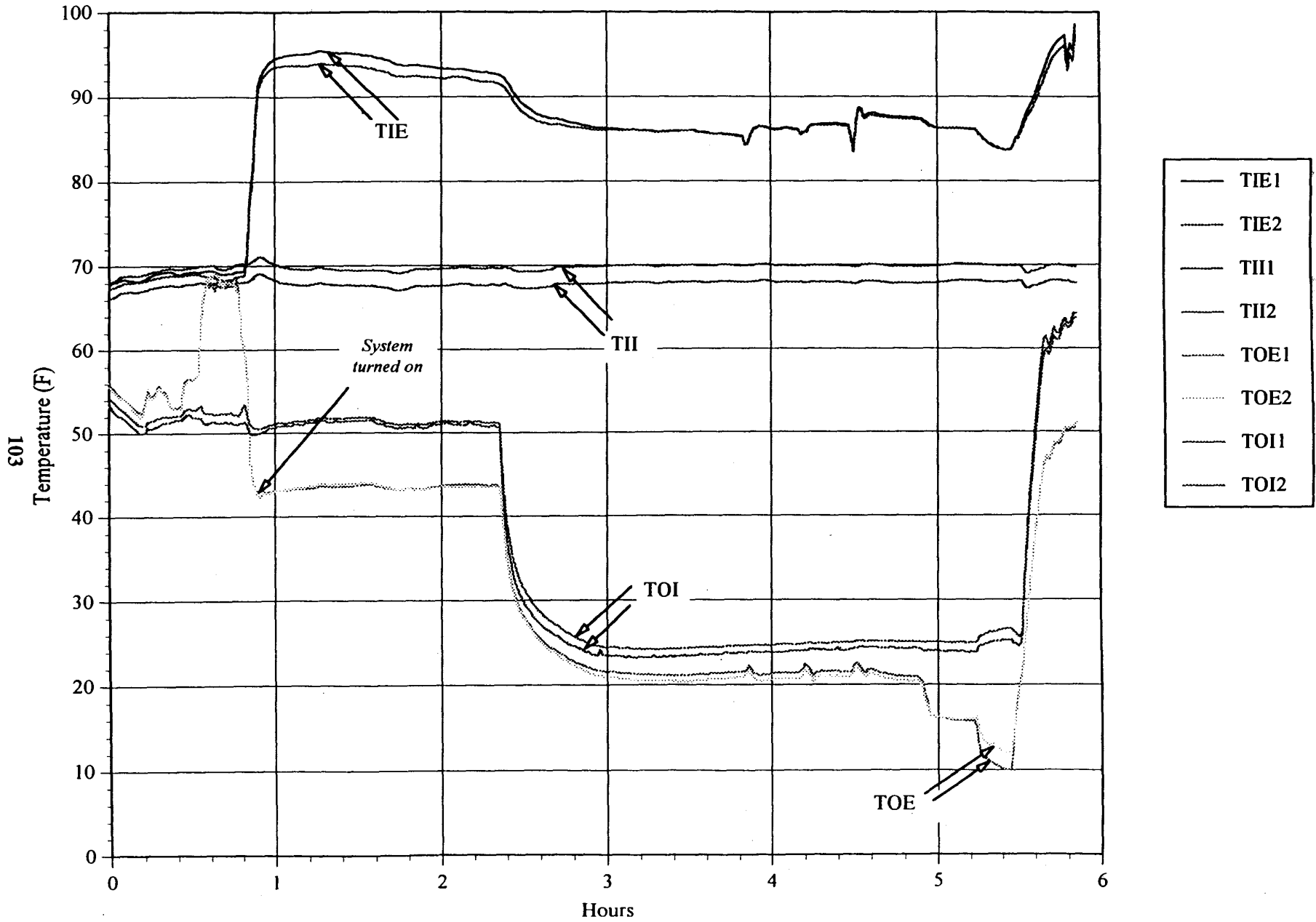


Heat Pump R407C-Castrol SW68 Oil Circulation Test (22)

SLO 2/13/96

Heating Mode - Oil Injection

Air Side Temperatures



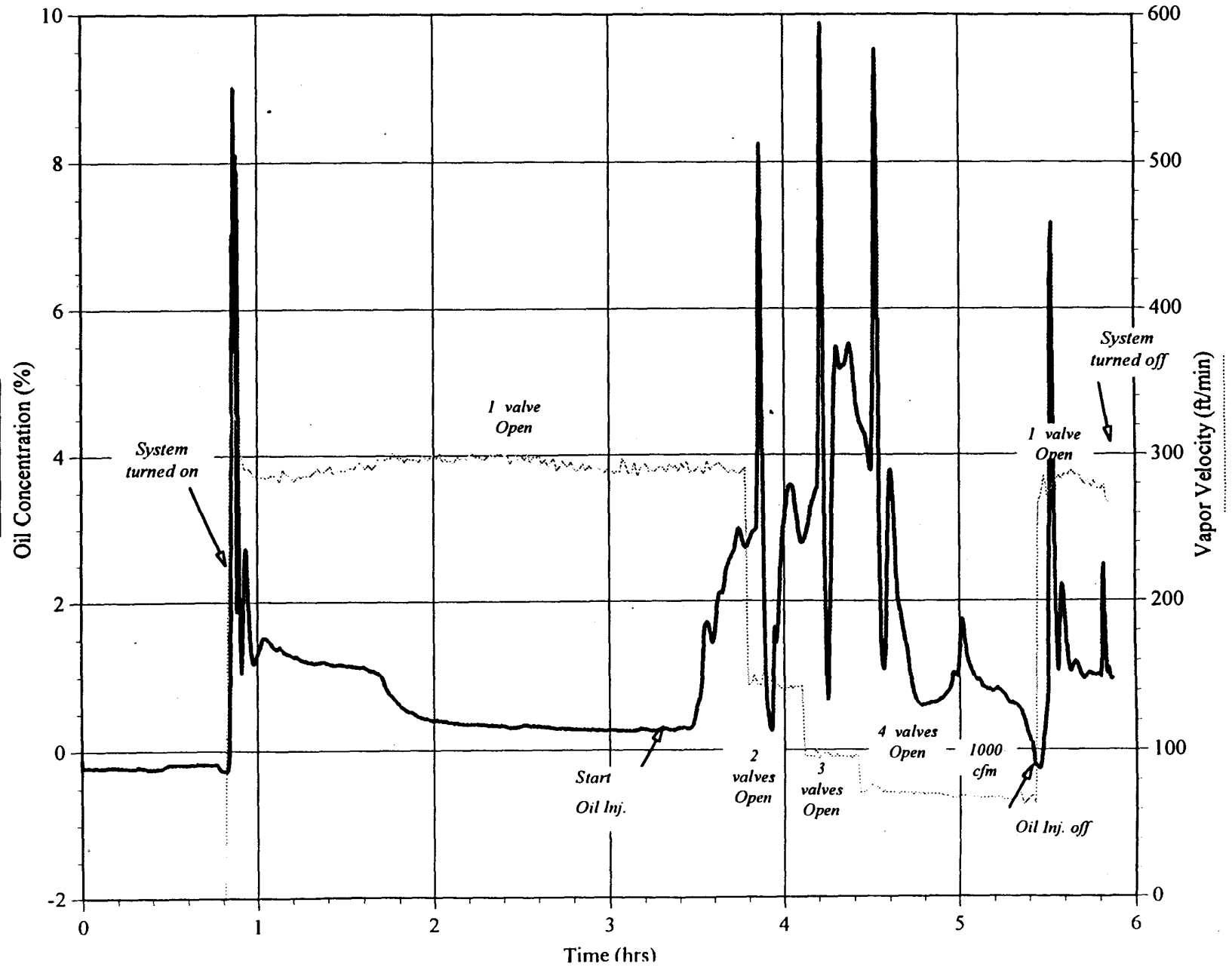
Heat Pump R407C-Castrol SW68 Oil Circulation Test (22)

SLO 2/13/96

Heating Mode - Oil Injection

Oil Flows

104

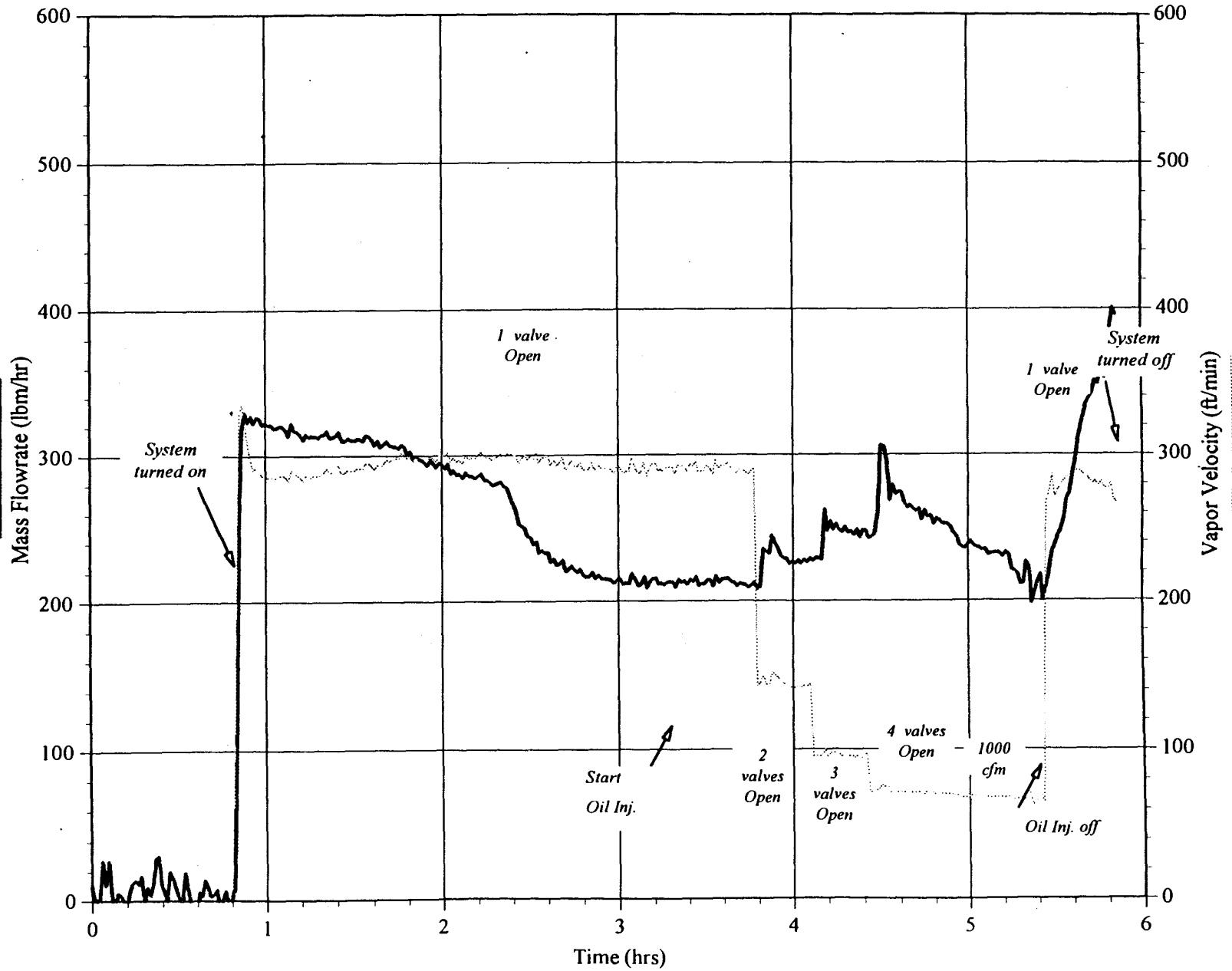


Heat Pump R407C-Castrol SW68 Oil Circulation Test (22)

SLO 2/13/96

Heating Mode - Oil Injection

105

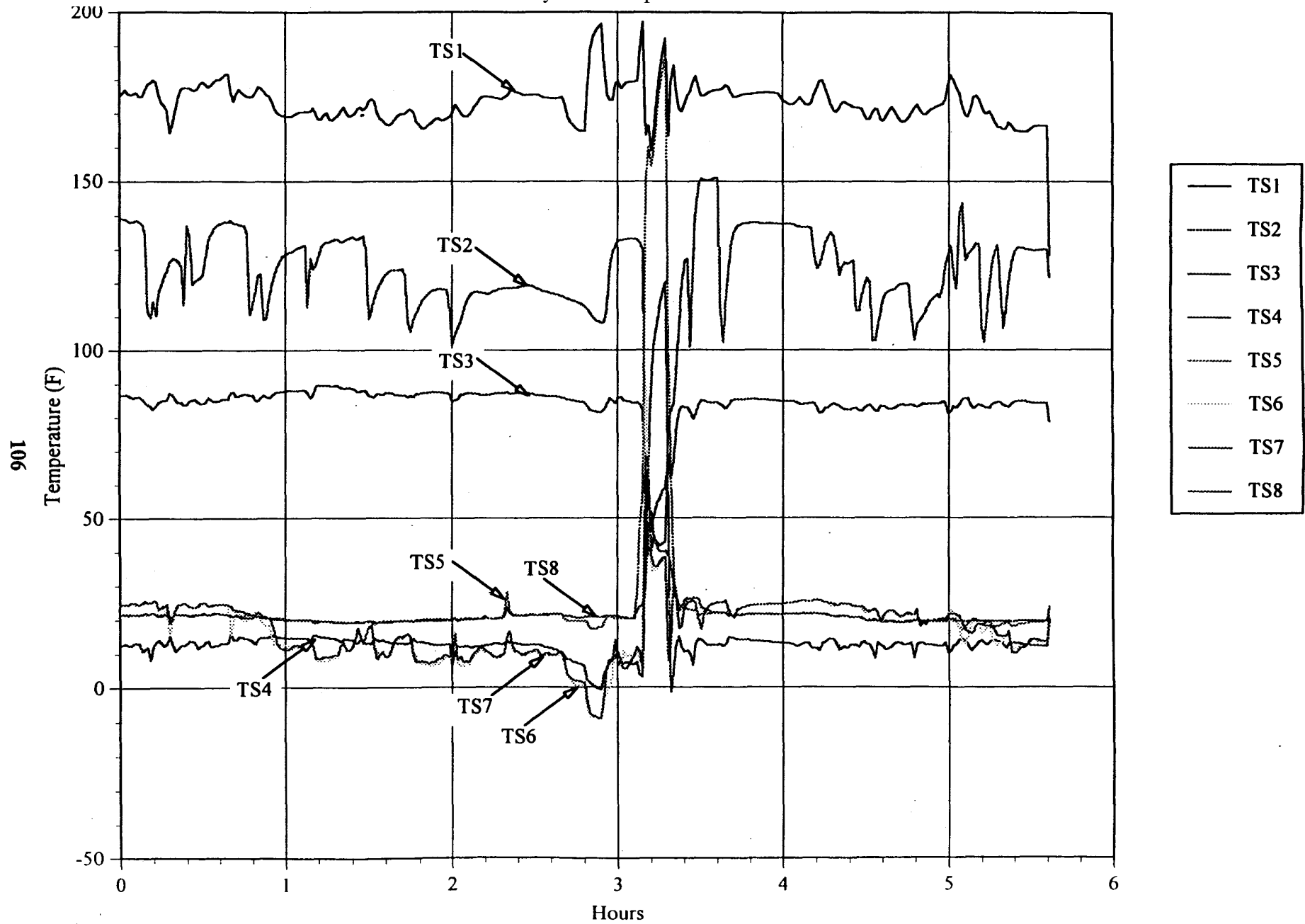


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (23&24)

Heating Mode - Oil Injection

SLO 2/19/96

System Temperatures

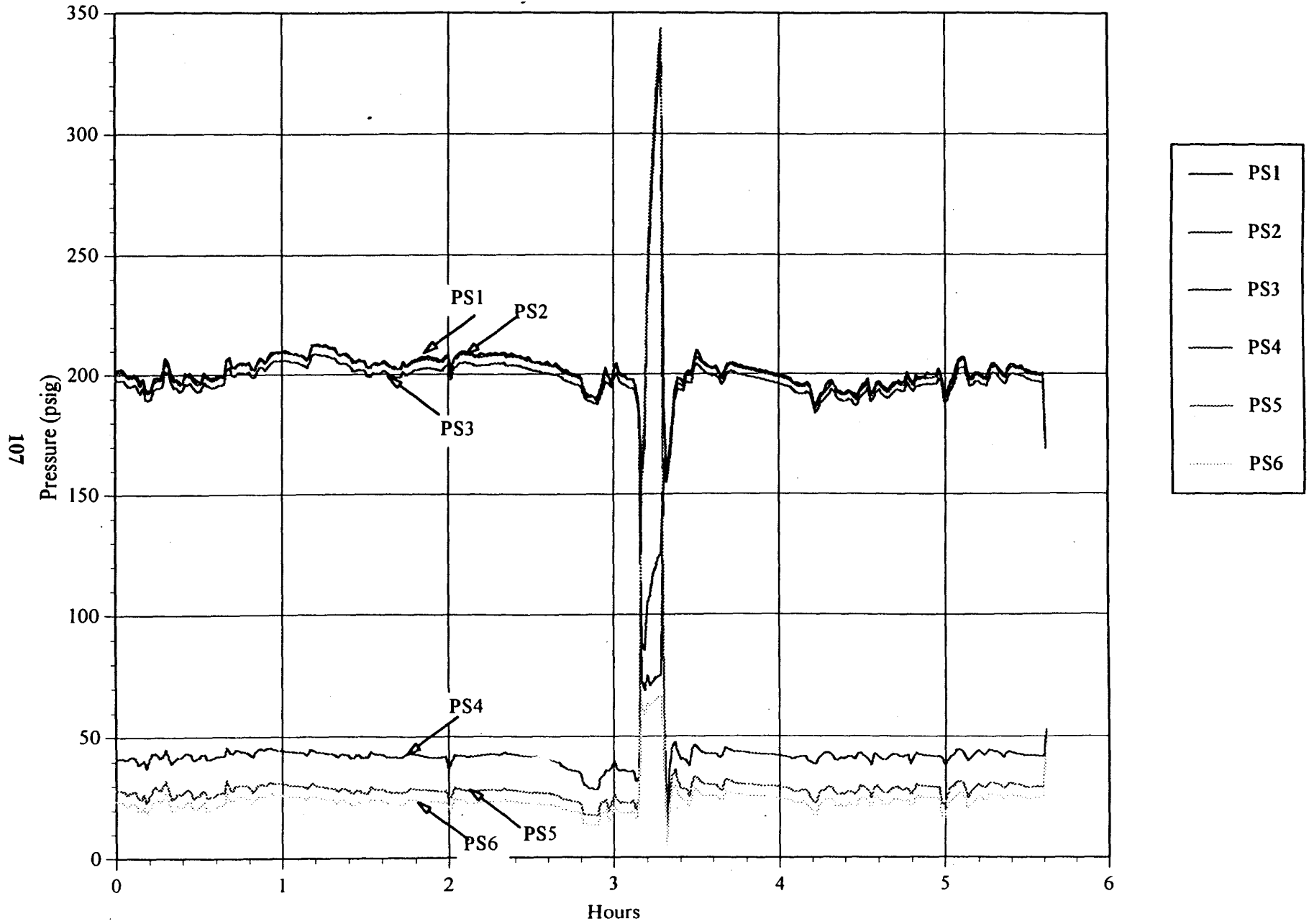


Heat Pump R407C - Castrol SW68 Oil Circulation Tests (23&24)

SLO 2/19/96

Heating Mode - Oil Injection

System Pressures

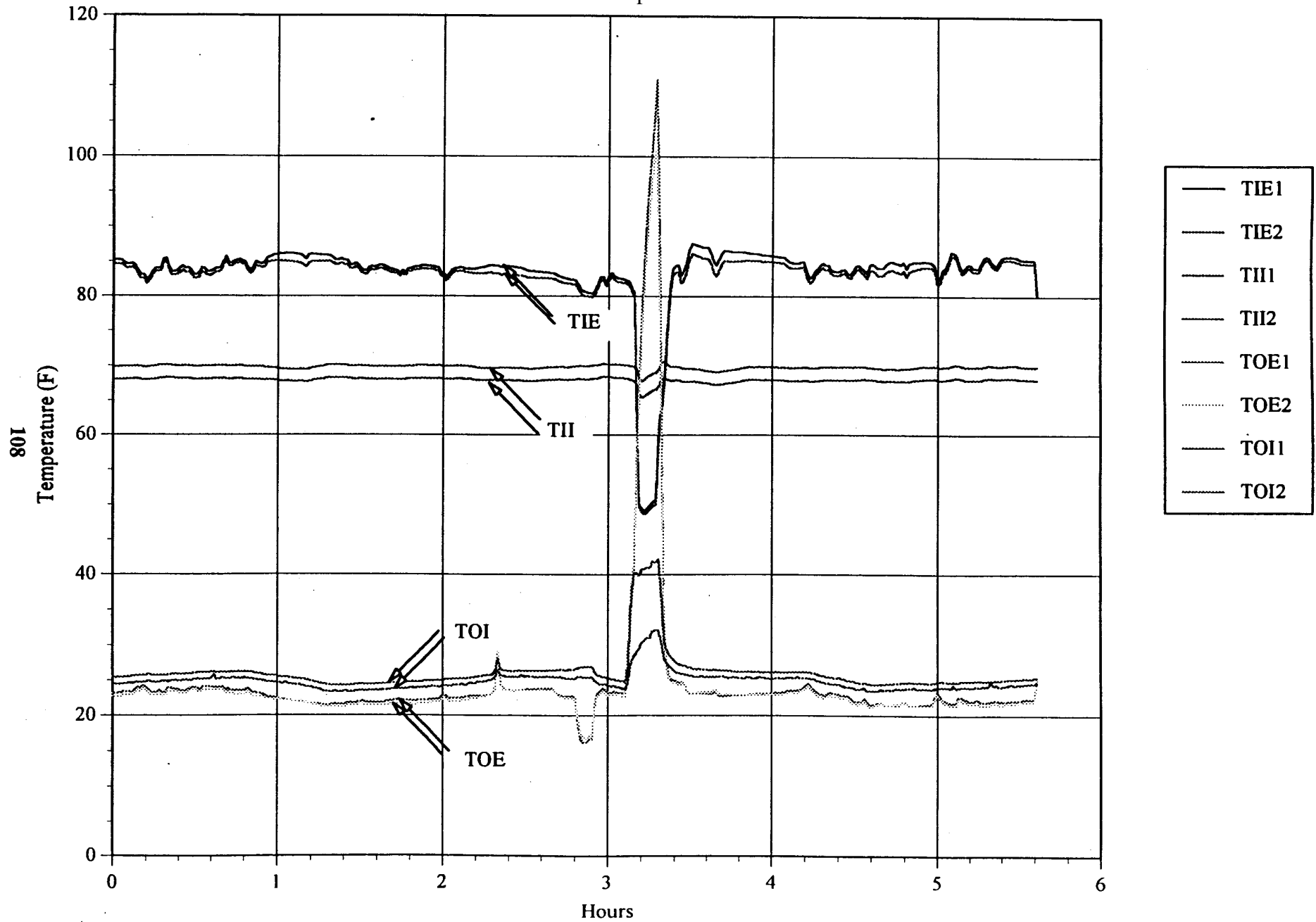


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (23&24)

Heating Mode - Oil Injection

SLO 2/19/96

Air Side Temperatures

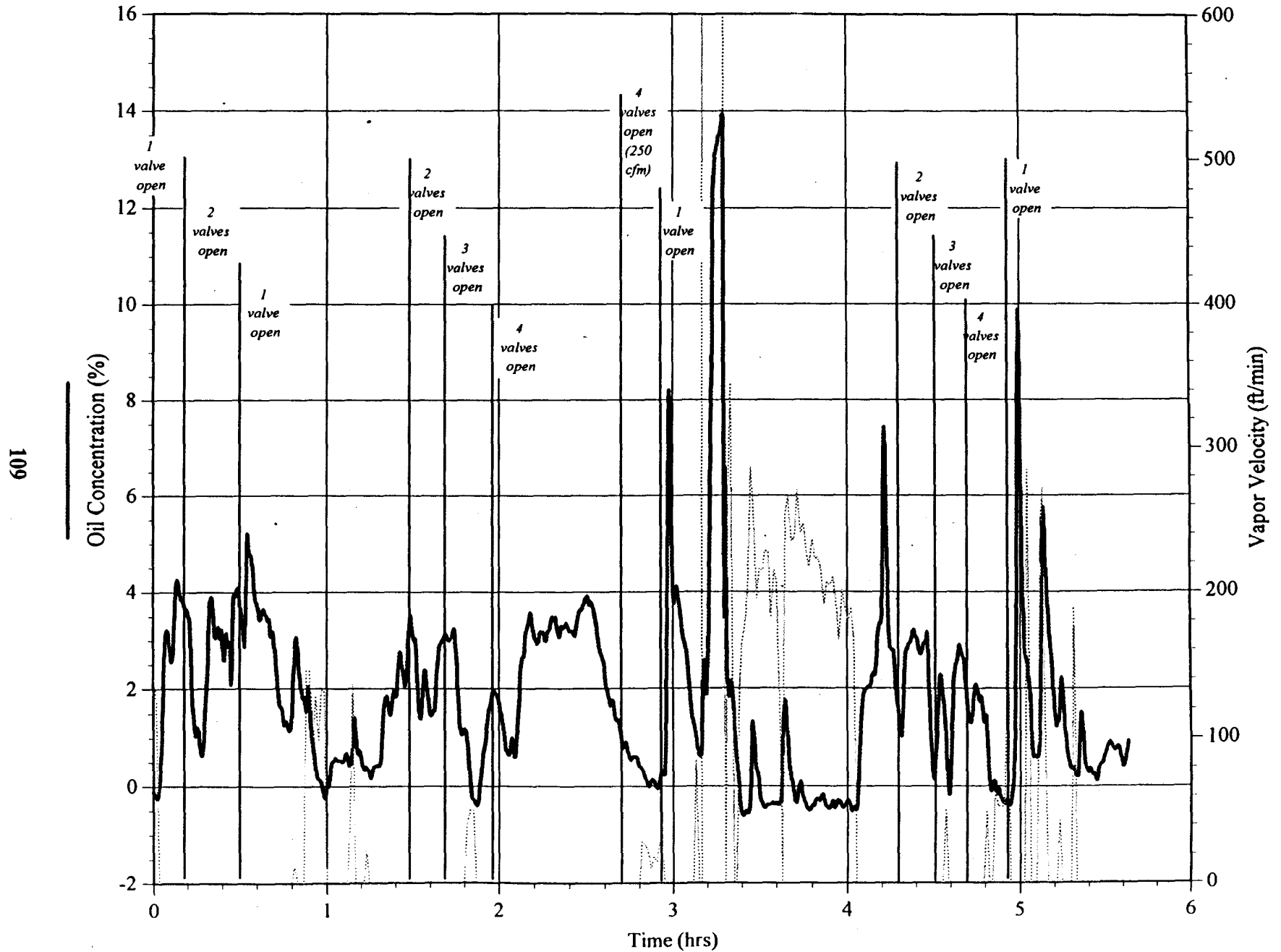


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (23&24)

Heating Mode - Oil Injection

SLO 2/19/96

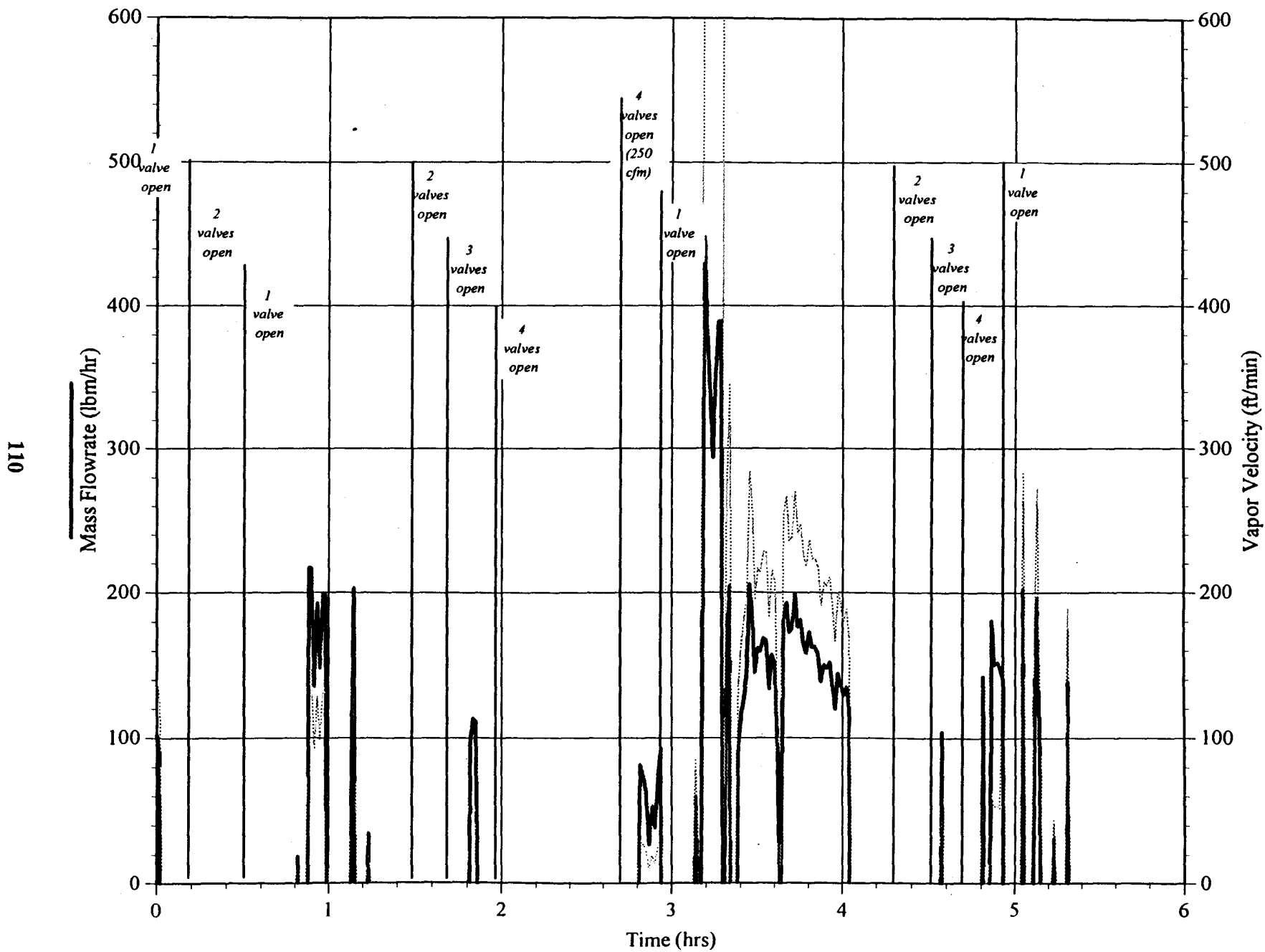
Oil Flows



Heat Pump R407C - Castrol SW68 Oil Circulation Tests (23&24)

SLO 2/19/96

Heating Mode - Oil Injection

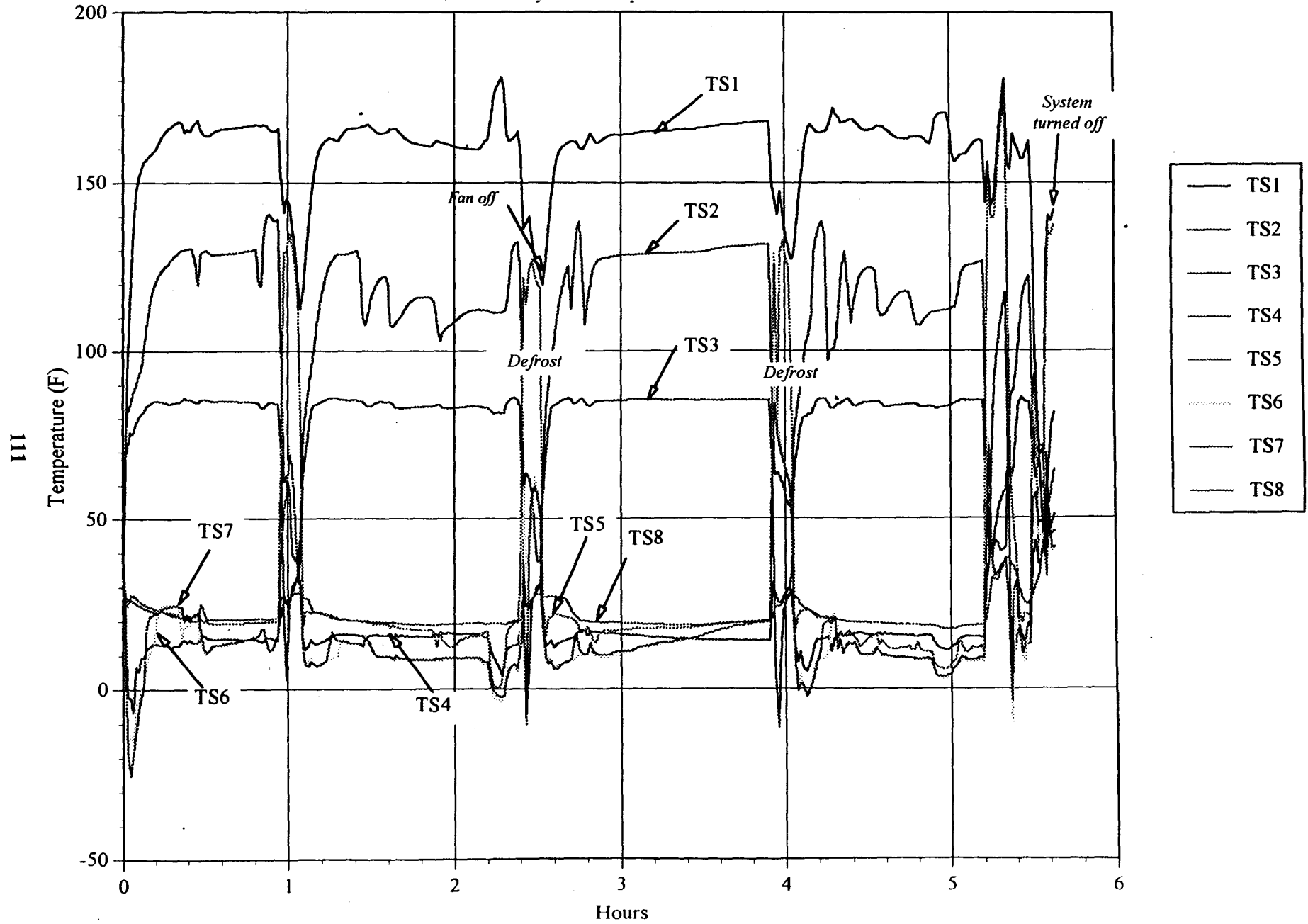


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (25&26)

Heating Mode - No Oil Injection

SLO 2/20/96

System Temperatures

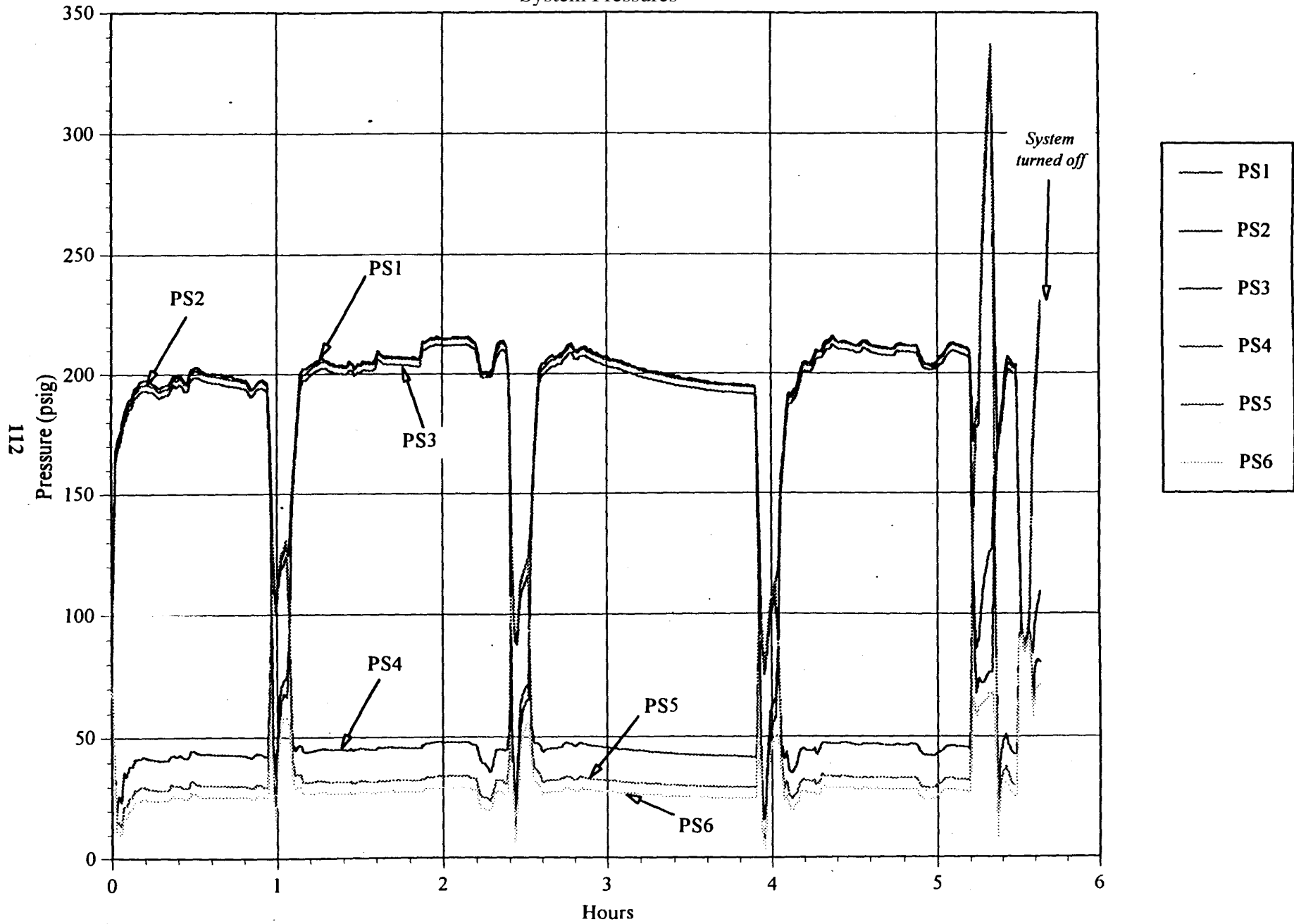


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (25&26)

SLO 2/20/96

Heating Mode - No Oil Injection

System Pressures

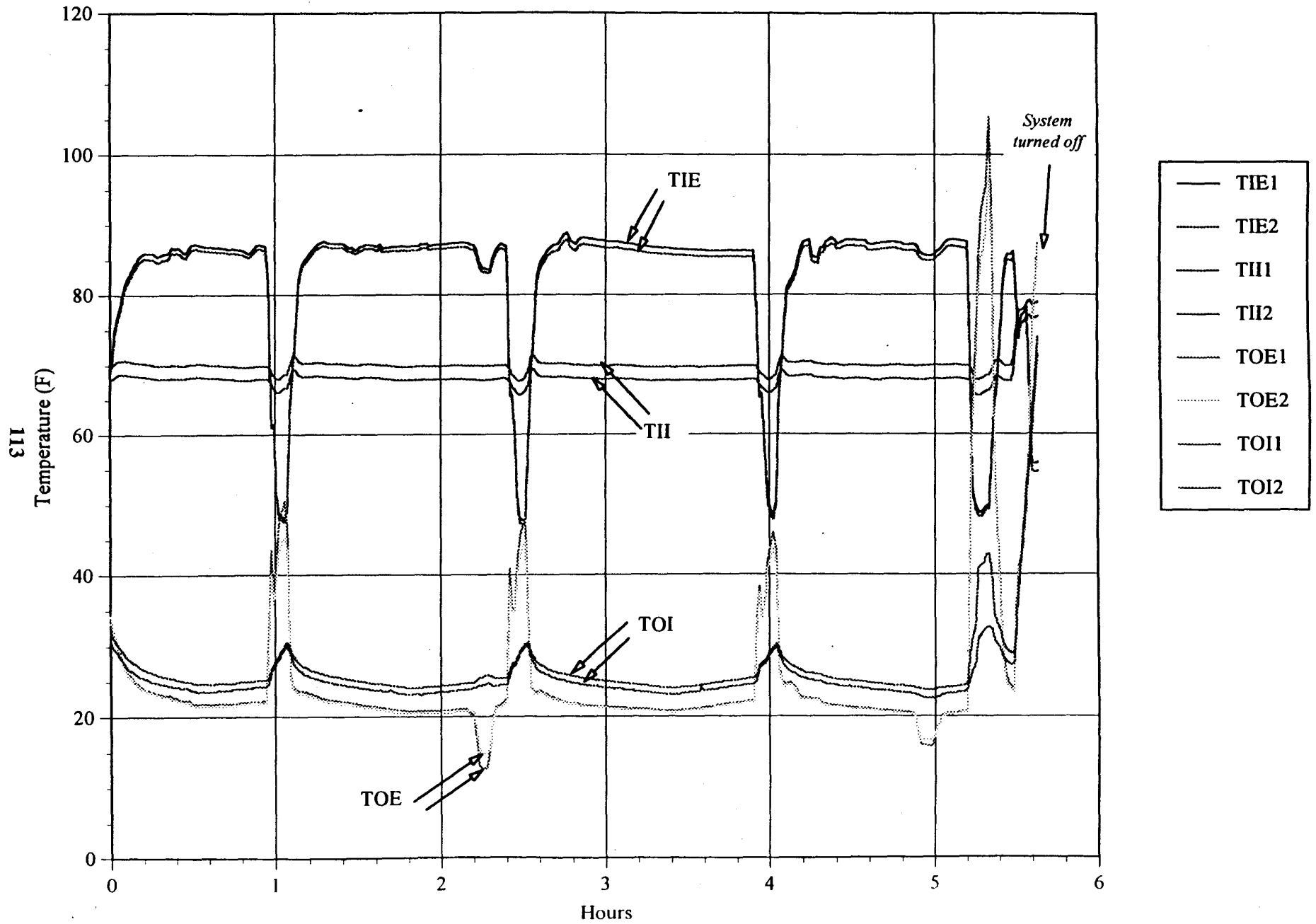


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (25&26)

Heating Mode - No Oil Injection

SLO 2/20/96

Air Side Temperatures

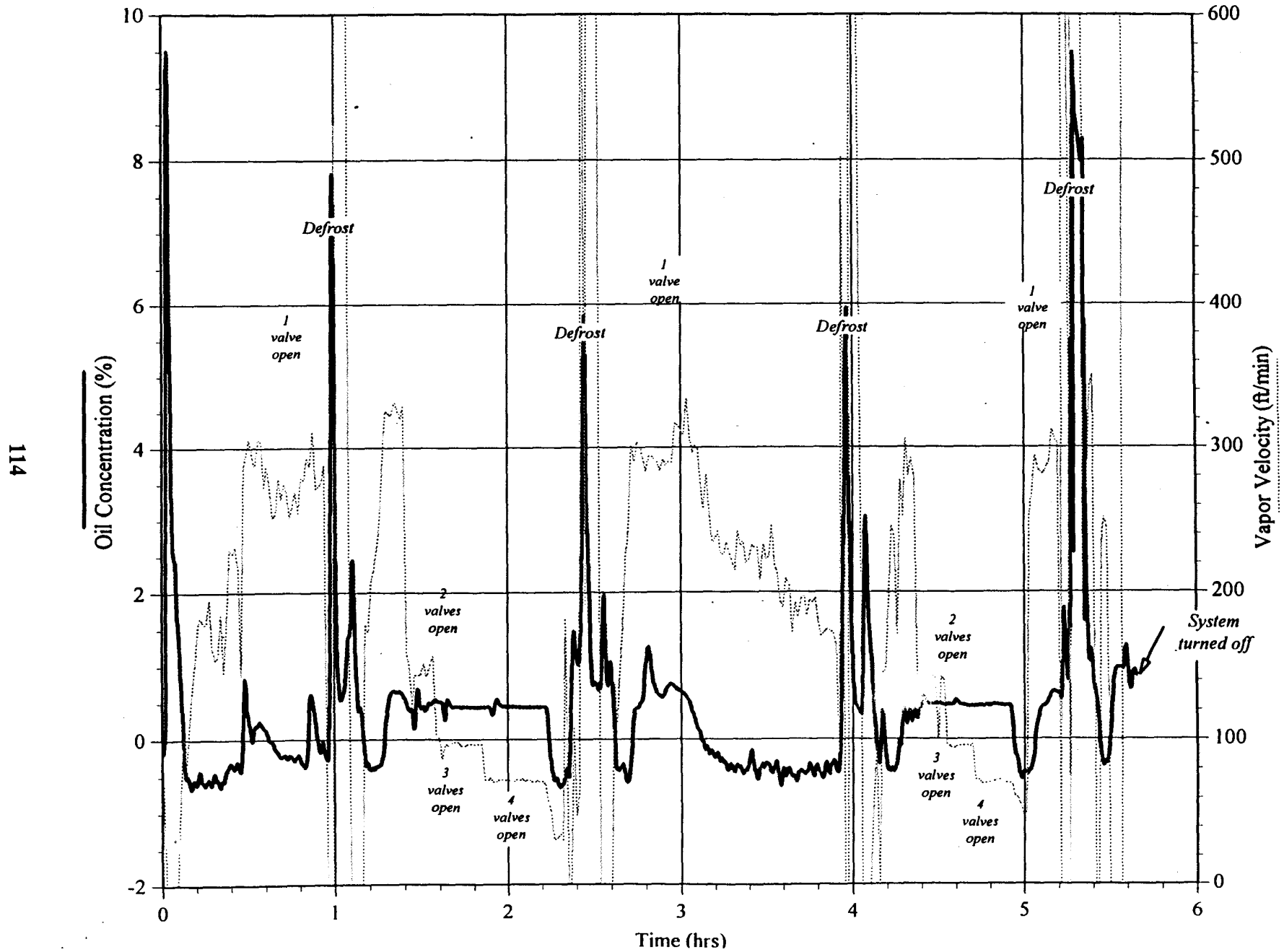


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (25&26)

Heating Mode - No Oil Injection

SLO 2/20/96

Oil Flows

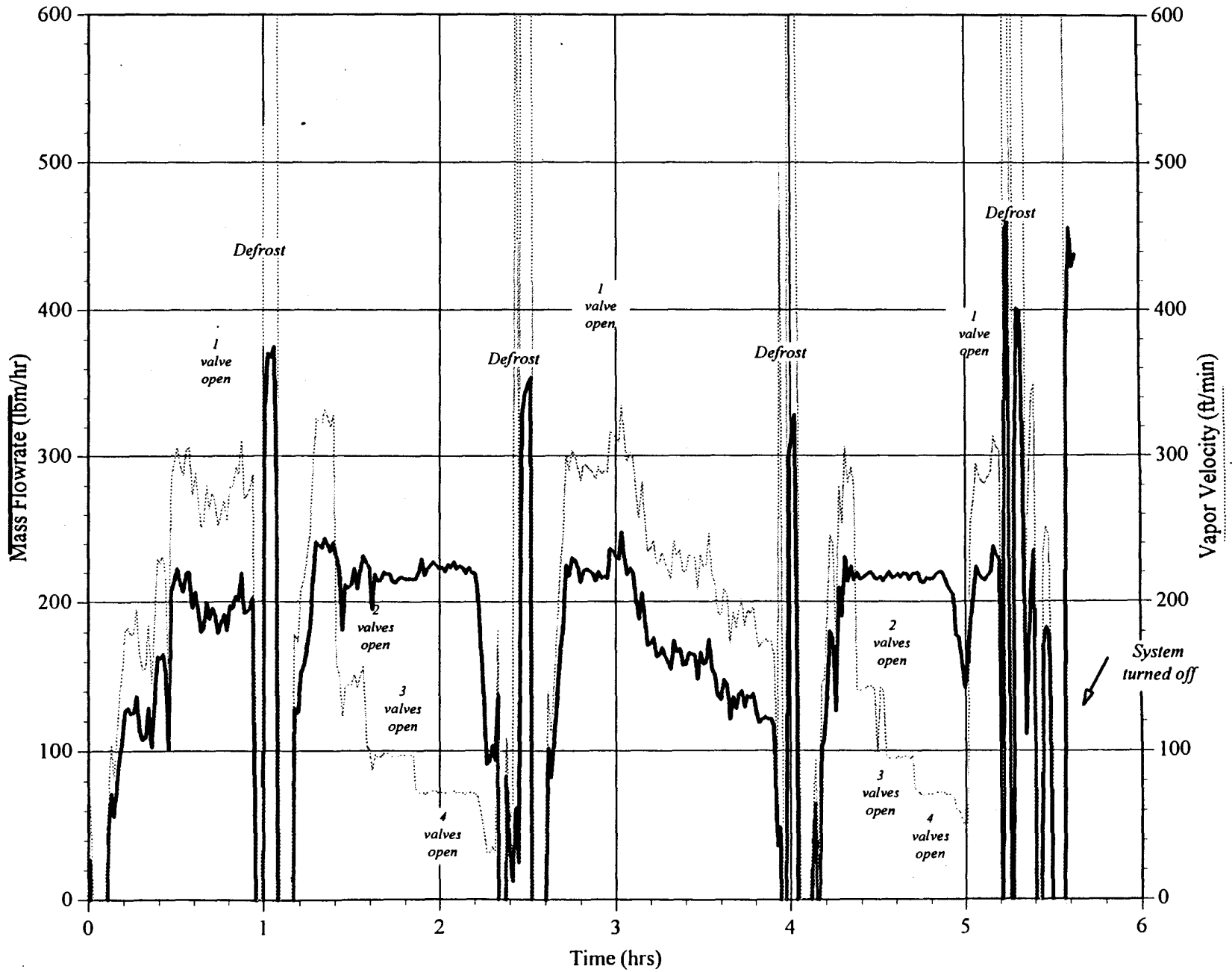


Heat Pump R407C- Castrol SW68 Oil Circulation Tests (25&26)

SLO 2/20/96

Heating Mode - No Oil Injection

115



Refrigerant/Lubricant Test Series

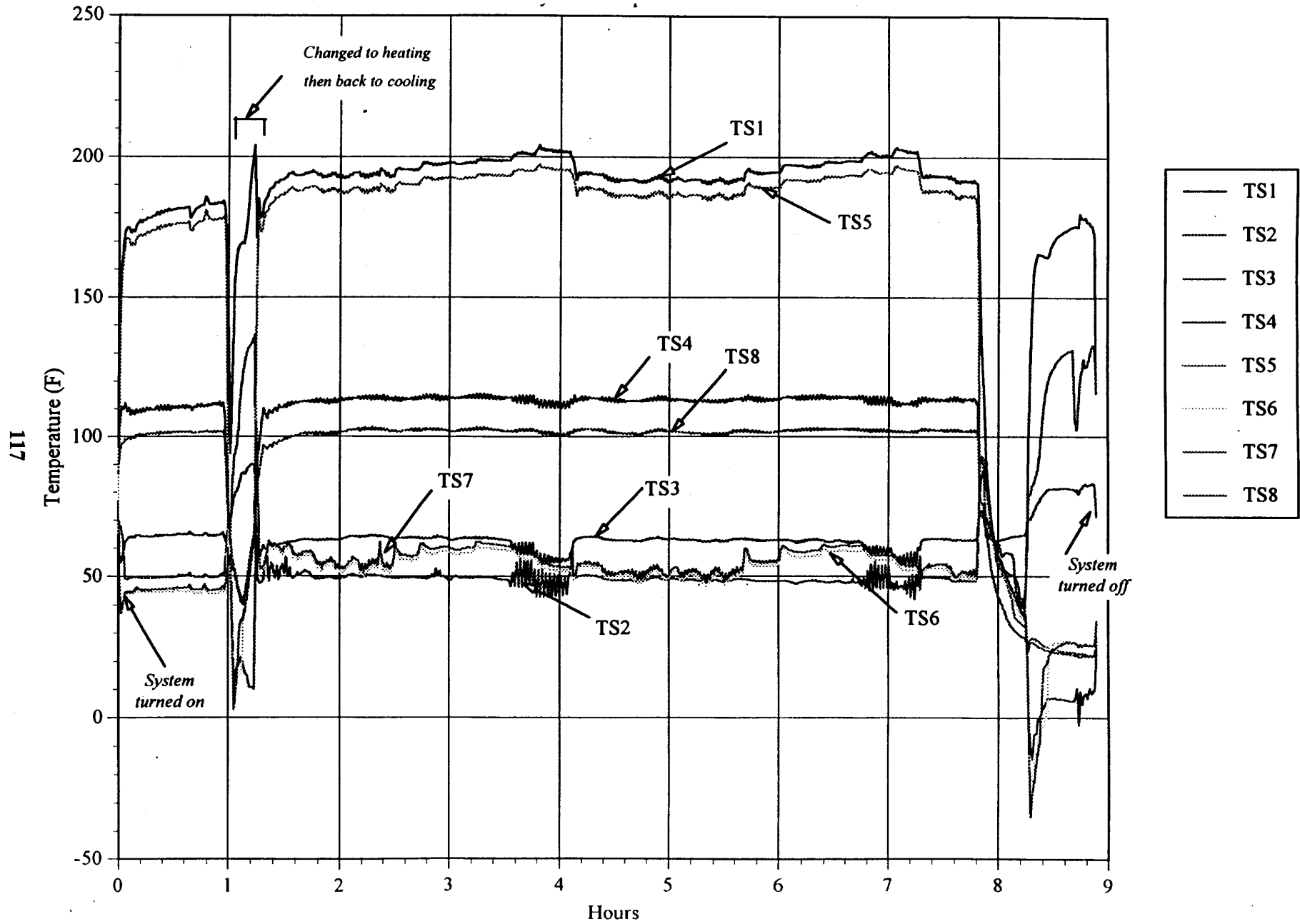
R407C - ICI RL32S

Heat Pump R407C- ICI RL32S Oil Circulation Tests (27&28)

Cooling Mode - No Oil Injection

SLO 2/20/96

System Temperatures

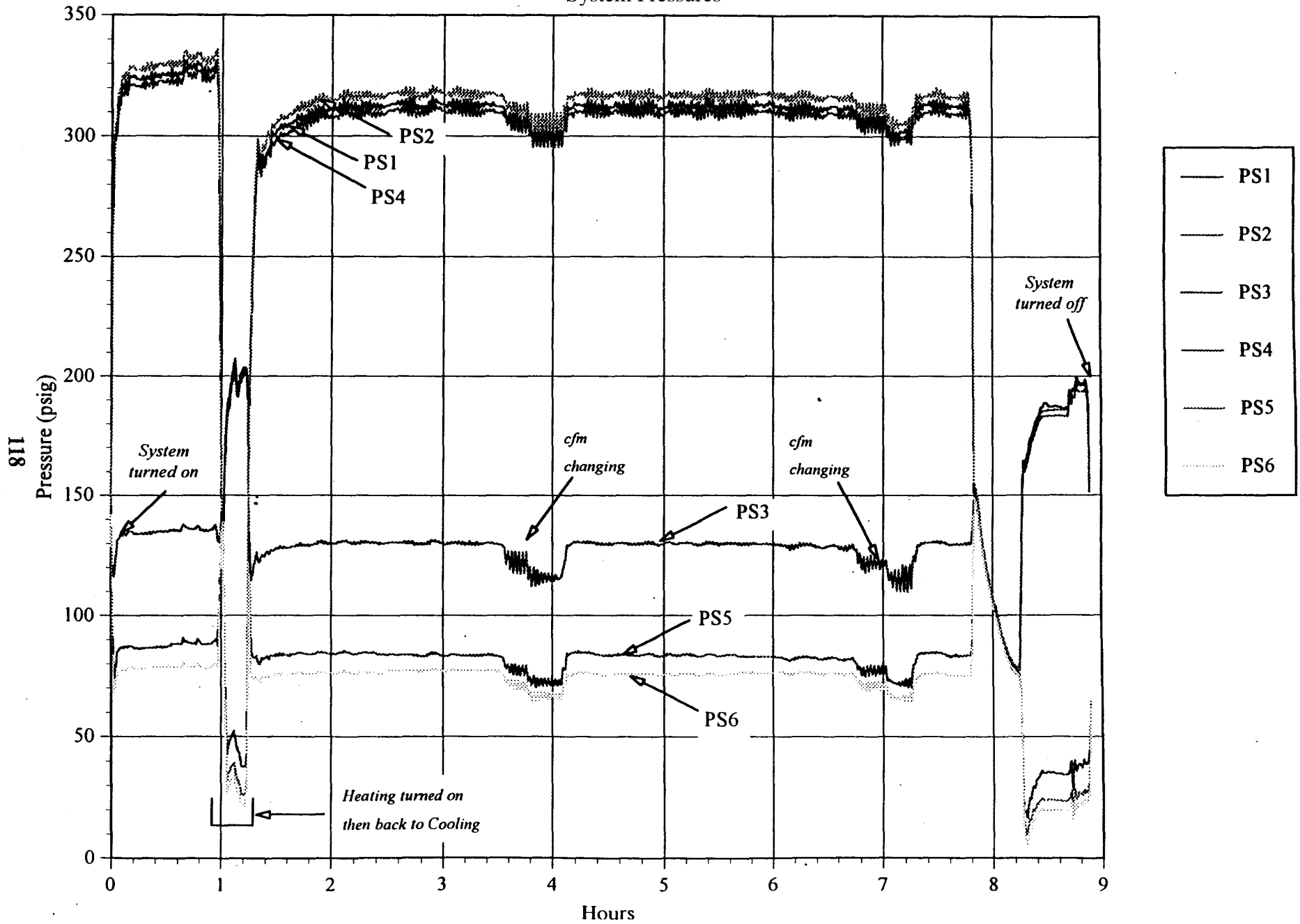


Heat Pump R407C - ICI RL32S Oil Circulation Tests (27&28)

Cooling Mode - No Oil Injection

SLO 2/20/96

System Pressures

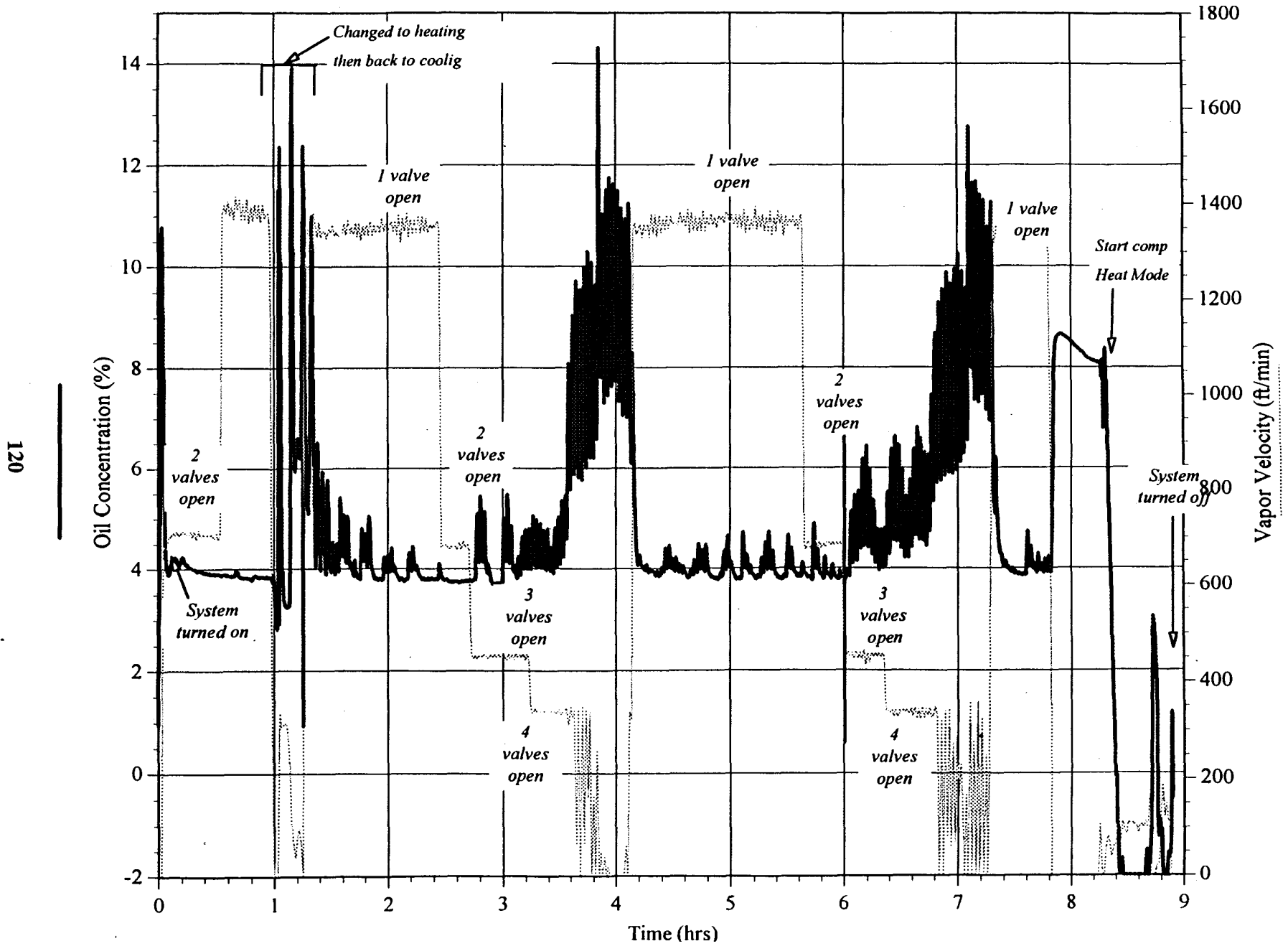


Heat Pump R407C- ICI RL32S Oil Circulation Tests (27&28)

Cooling Mode - No Oil Injection

SLO 2/20/96

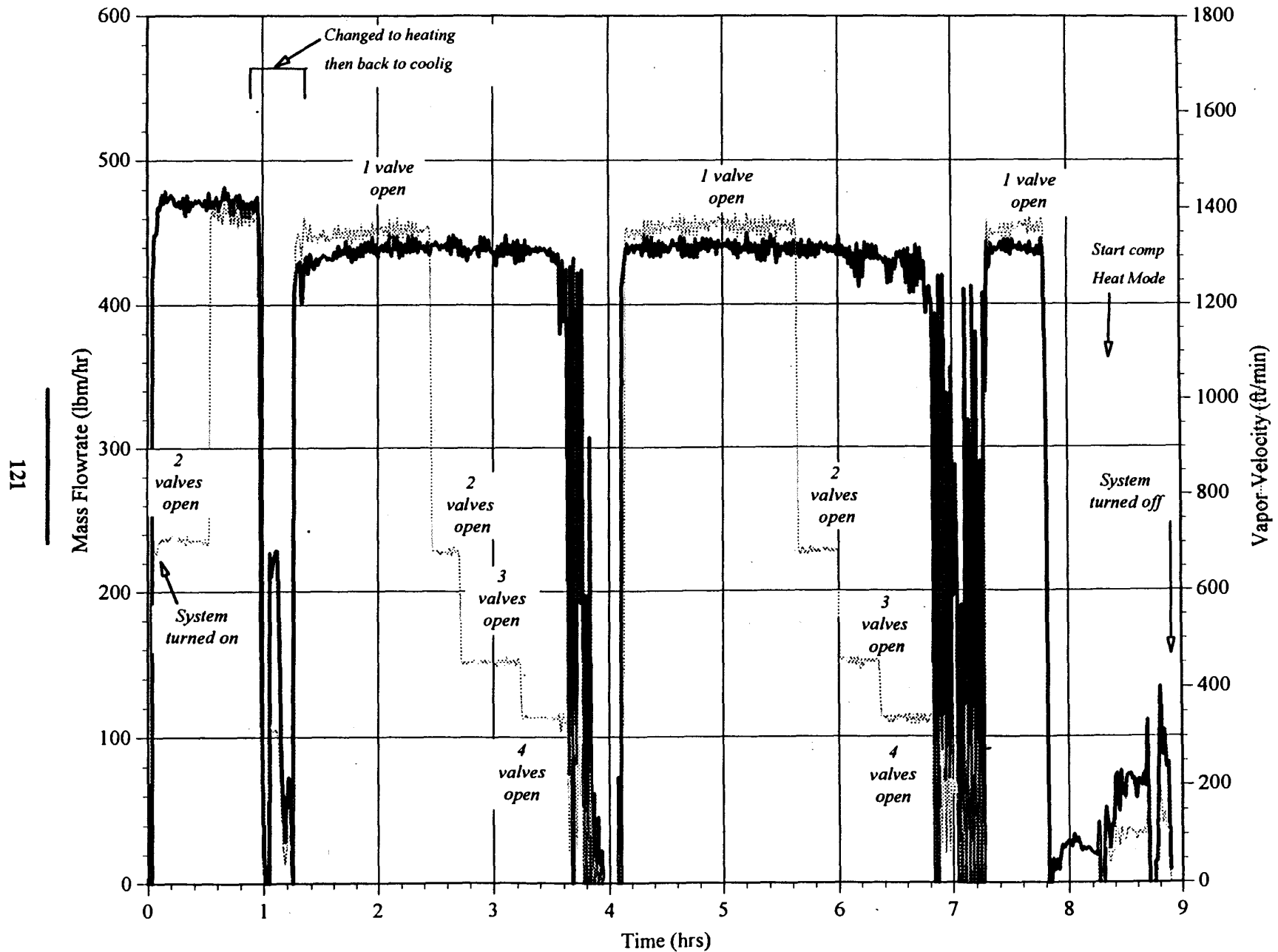
Oil Flows



Heat Pump R407C-ICI RL32S Oil Circulation Tests (27&28)

SLO 2/20/96

Cooling Mode - No Oil Injection

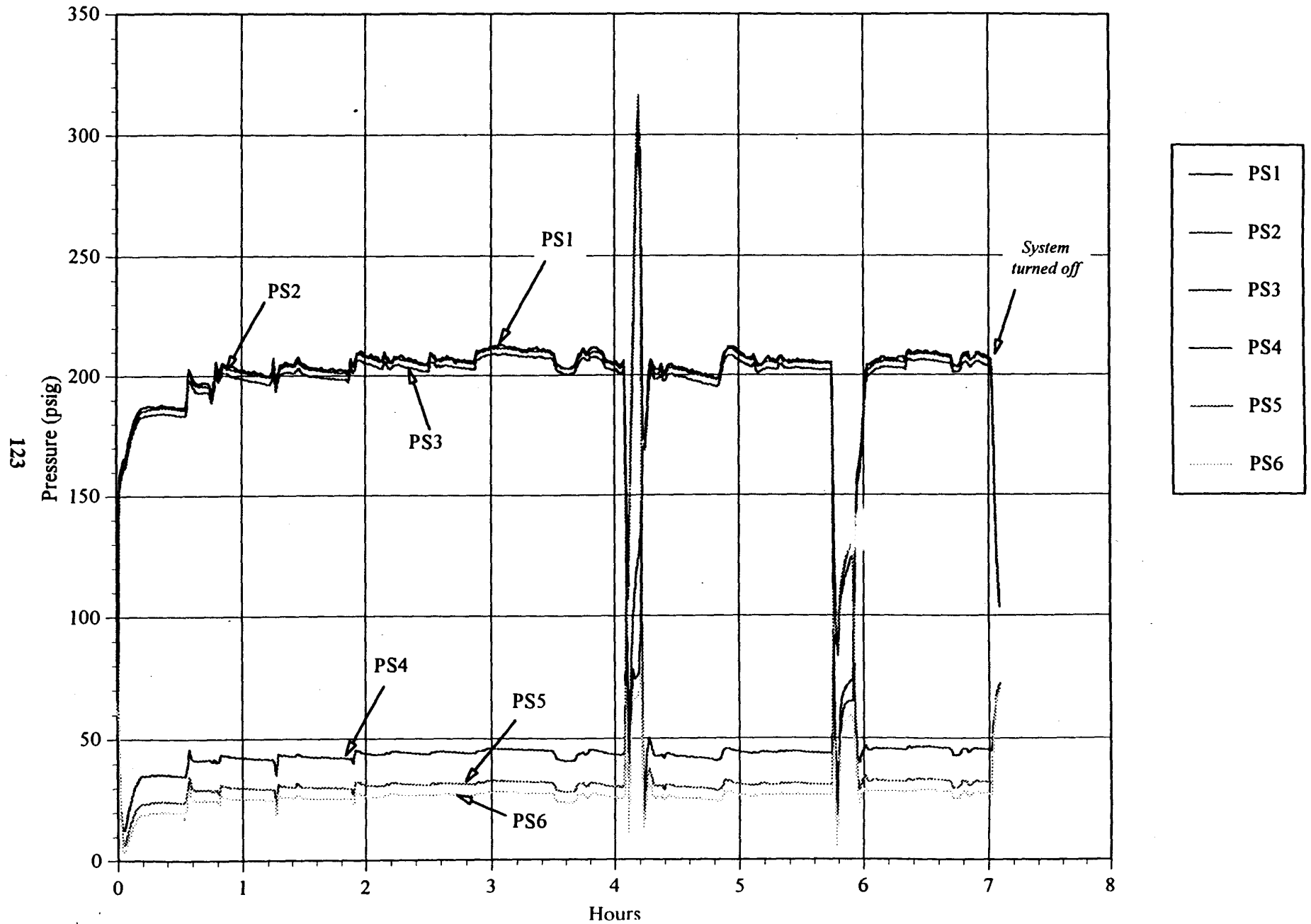


Heat Pump R407C- ICI RL32S Oil Circulation Tests (29&30)

Heating Mode - No Oil Injection

SLO 2/20/96

System Pressures

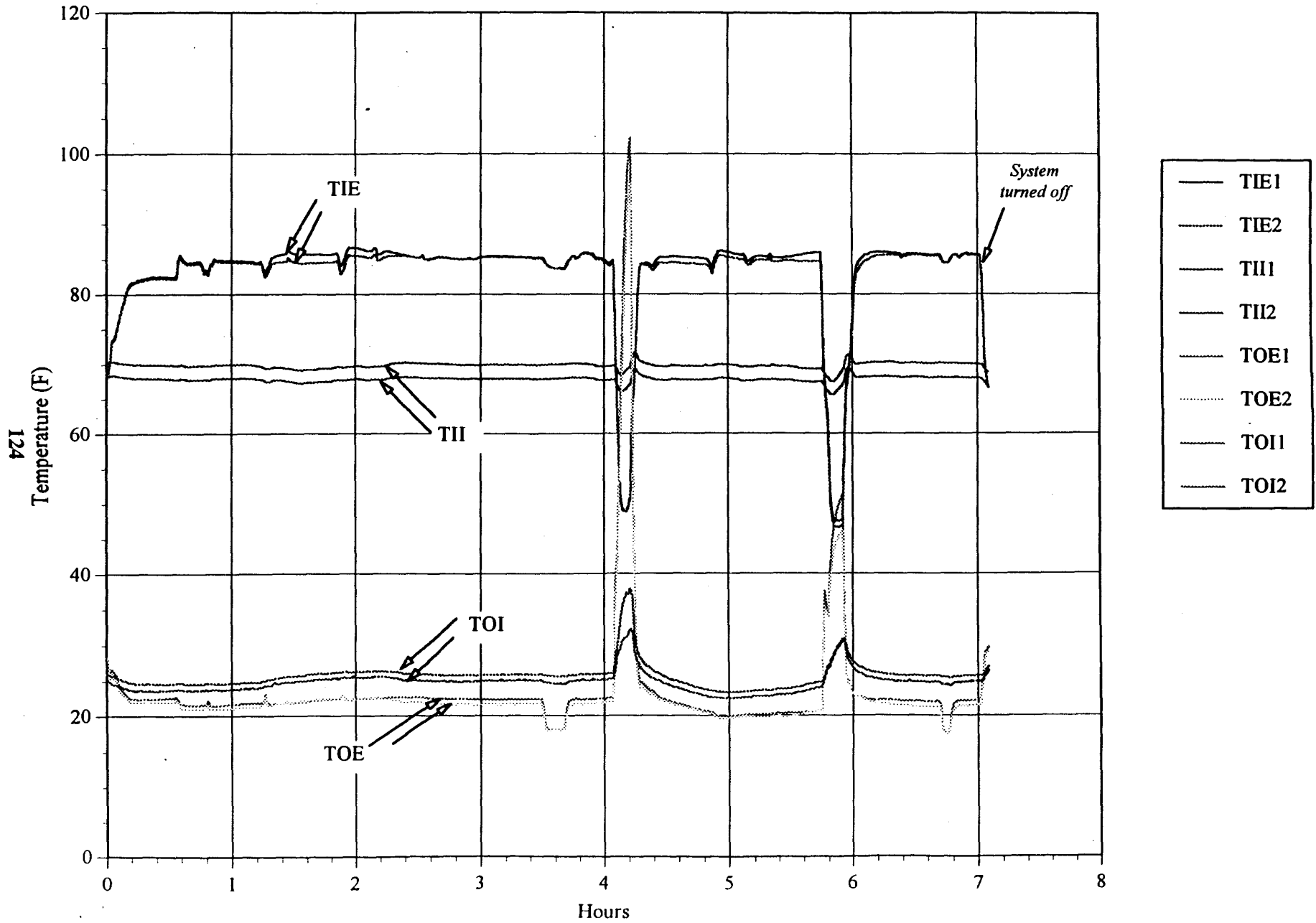


Heat Pump R407C- ICI RL32S Oil Circulation Tests (29&30)

Heating Mode - No Oil Injection

SLO 2/20/96

Air Side Temperatures

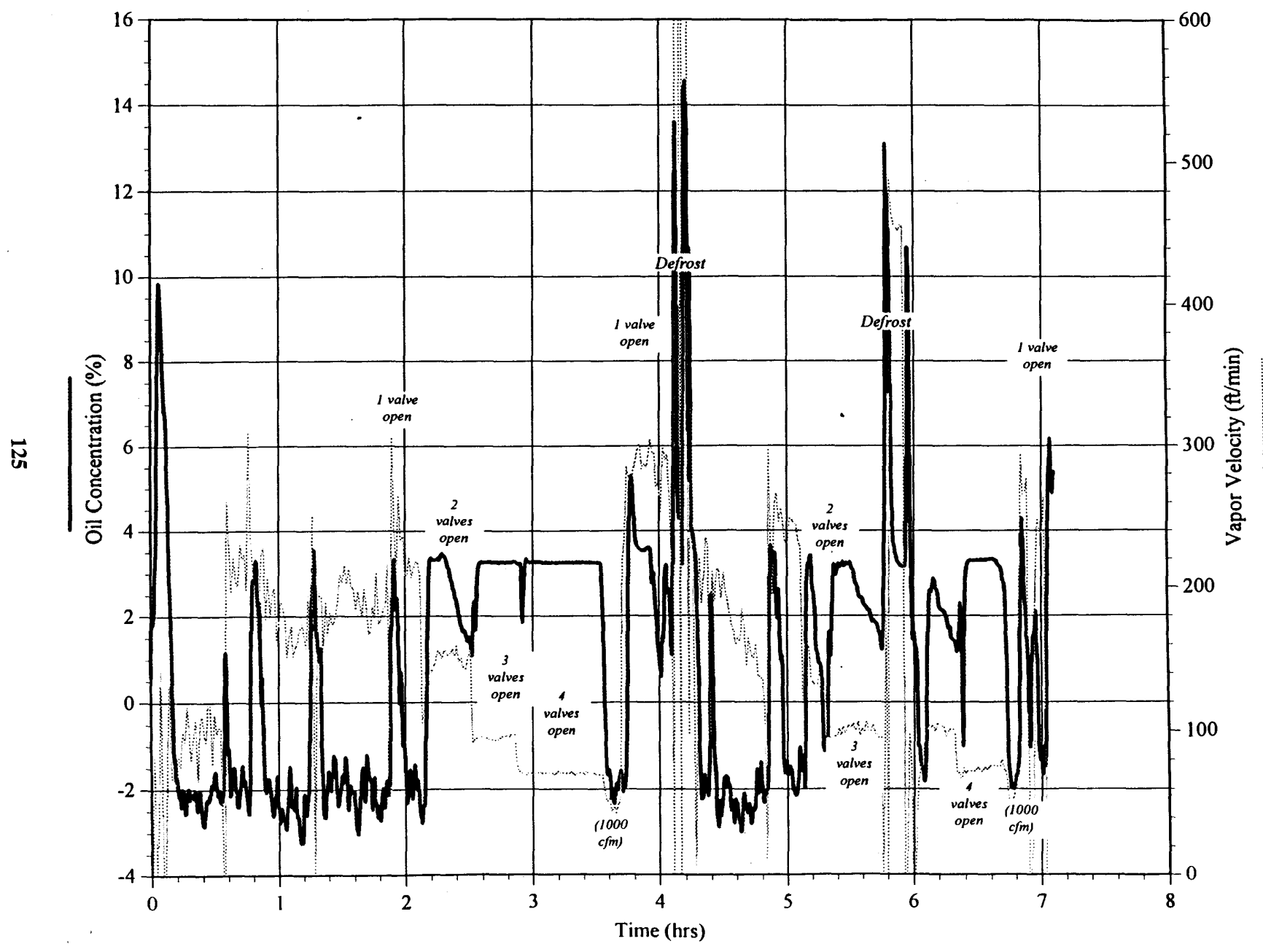


Heat Pump R407C-ICI RL32S Oil Circulation Tests (29&30)

SLO 2/20/96

Heating Mode - No Oil Injection

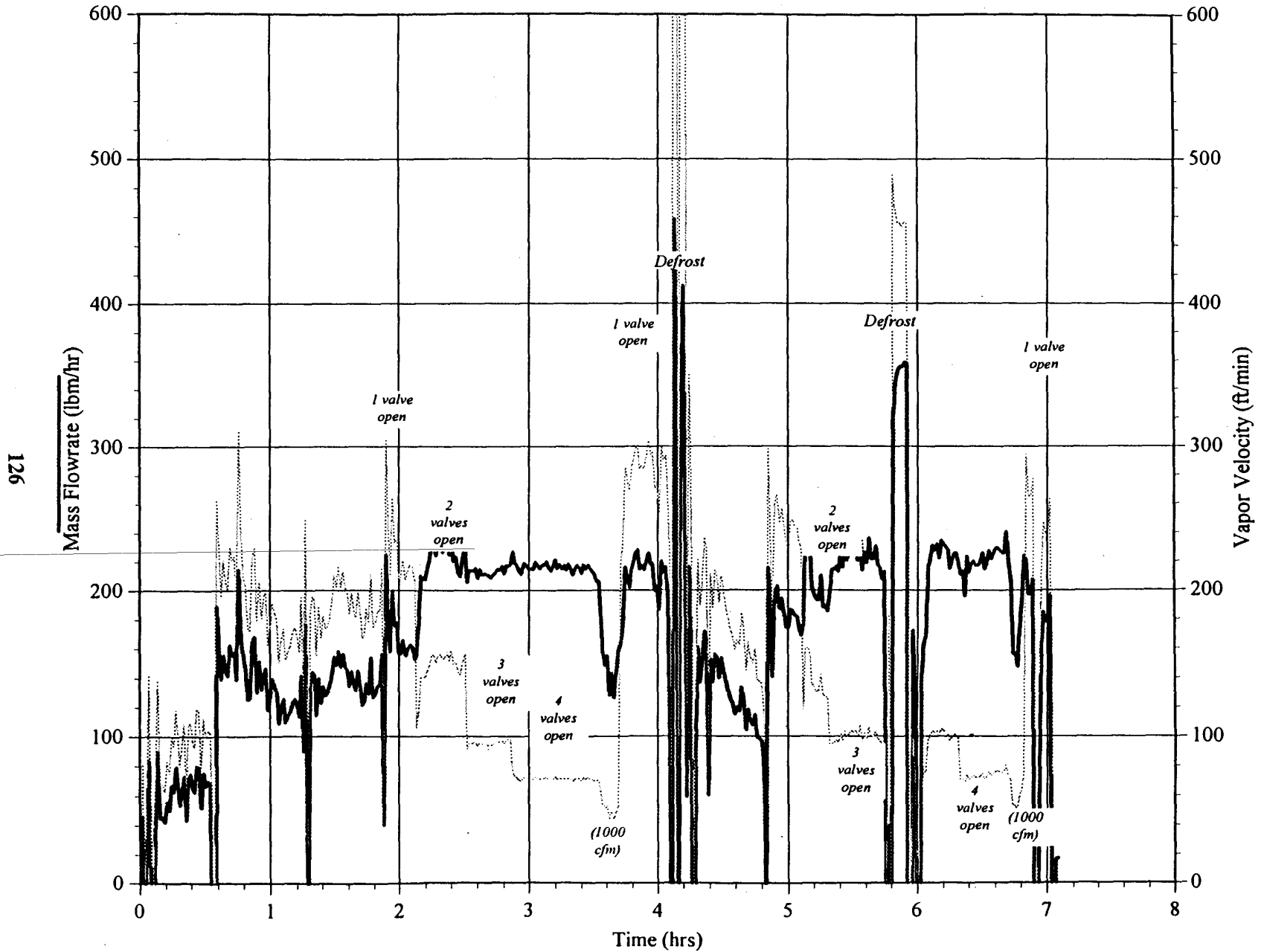
Oil Flows



Heat Pump R407C- ICI RL32S Oil Circulation Tests (29&30)

SLO 2/20/96

Heating Mode - No Oil Injection

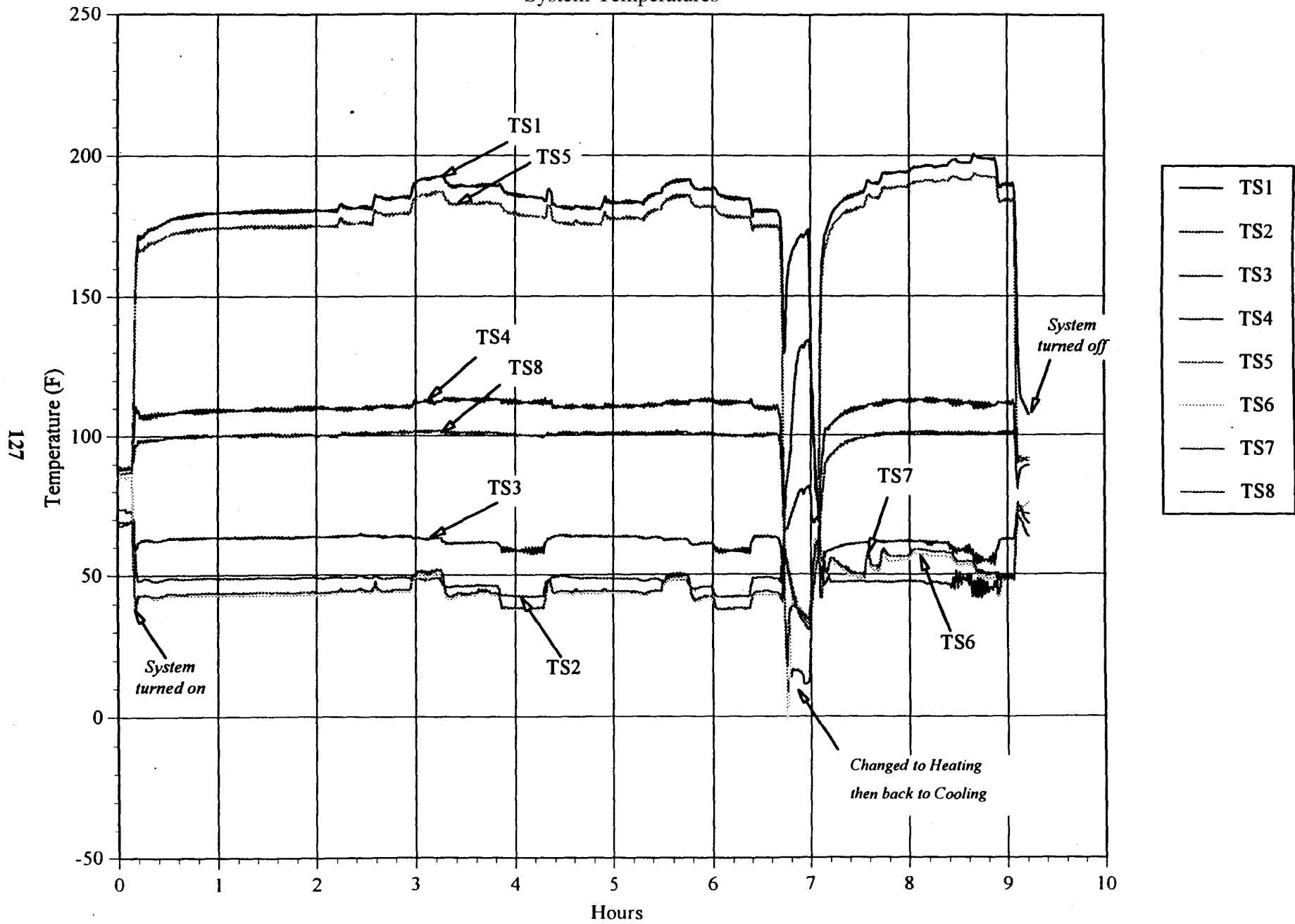


Heat Pump R407C- ICI RL32S Oil Circulation Tests (31-33)

Cooling Mode - Oil Injection

SLO 2/21/96

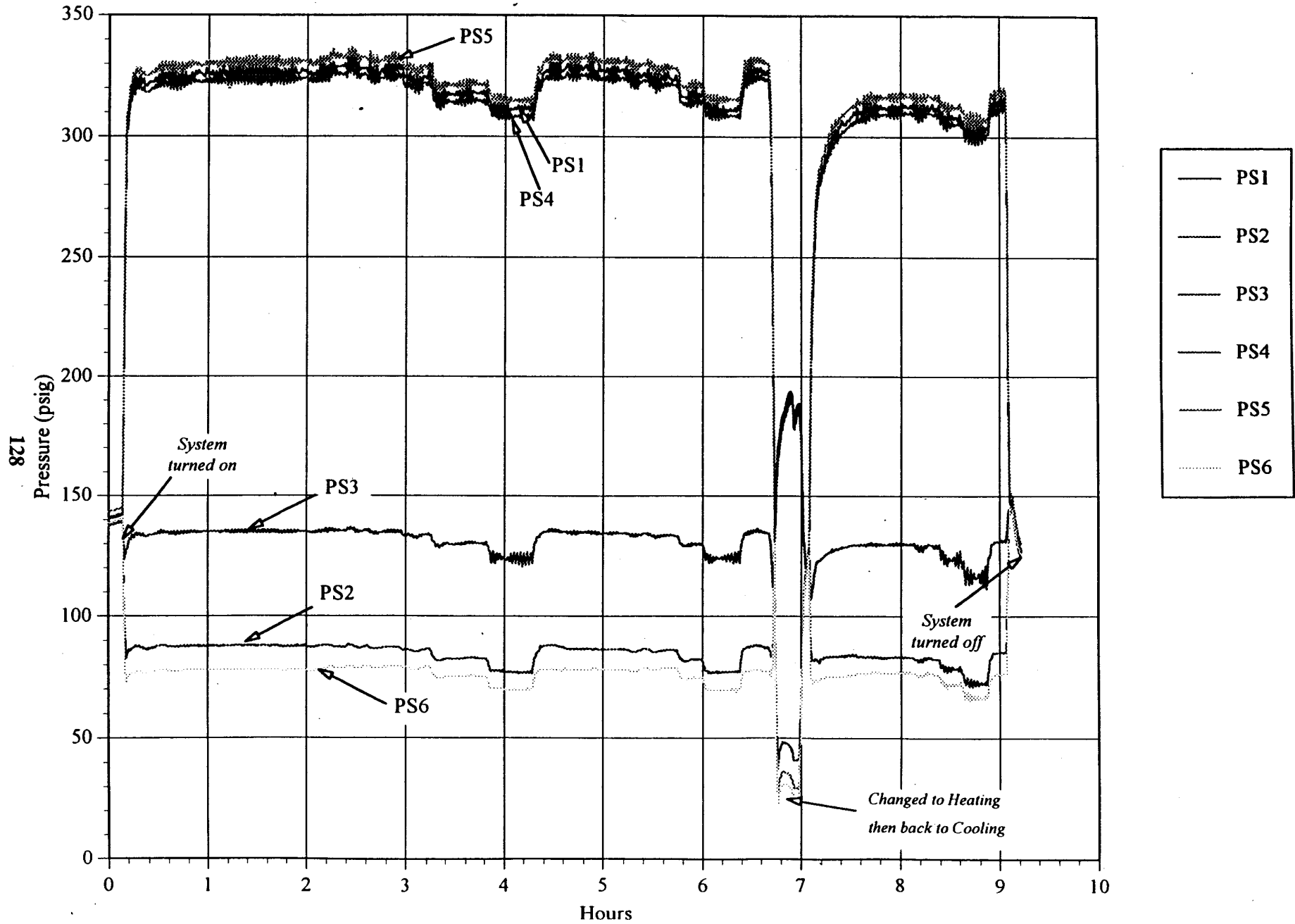
System Temperatures



Heat Pump R407C-ICI RL32S Oil Circulation Tests (31-33)

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Cooling Mode - Oil Injection System Pressures

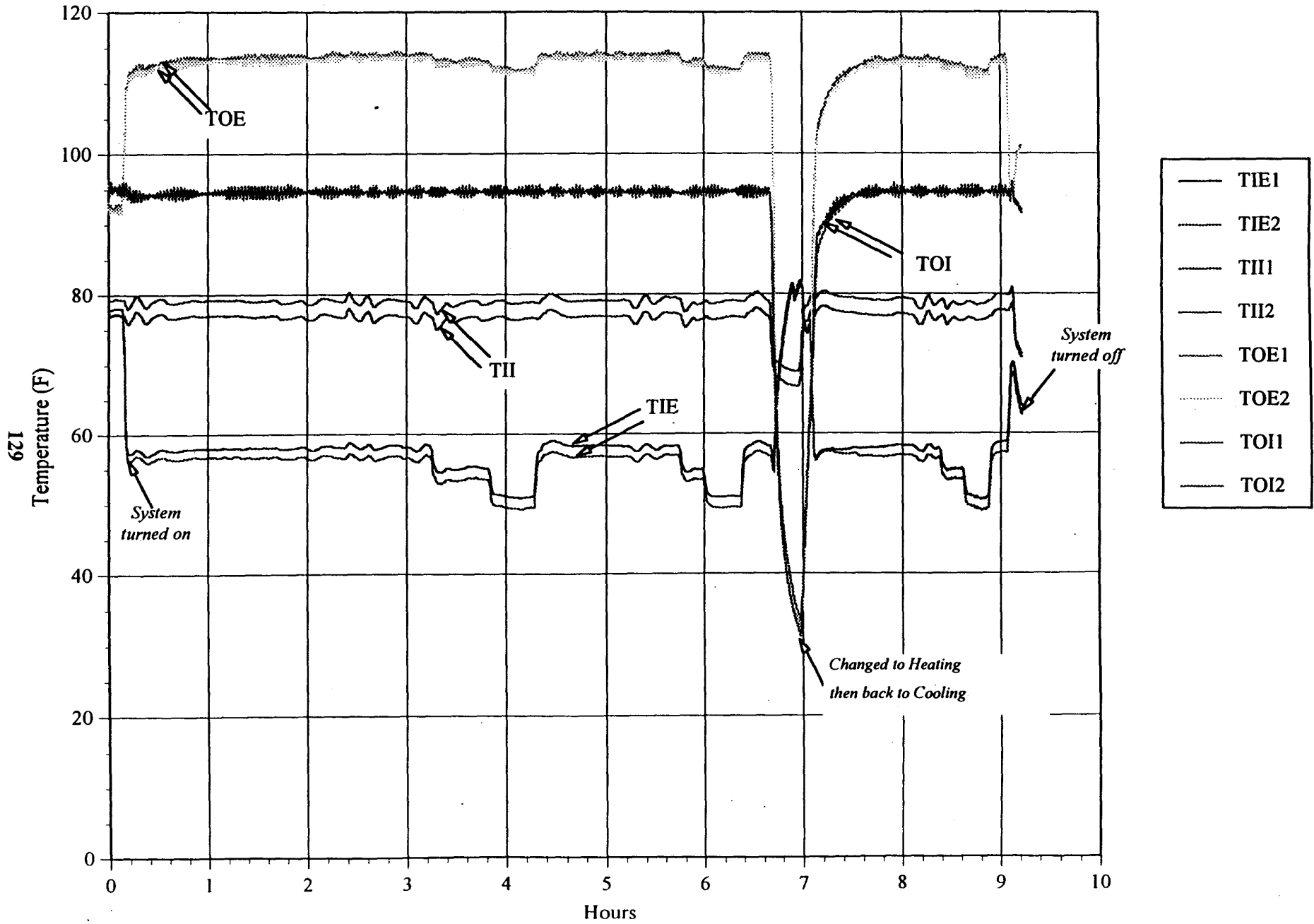


Heat Pump R407C- ICI RL32S Oil Circulation Tests (31-33)

Cooling Mode - Oil Injection

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Air Side Temperatures

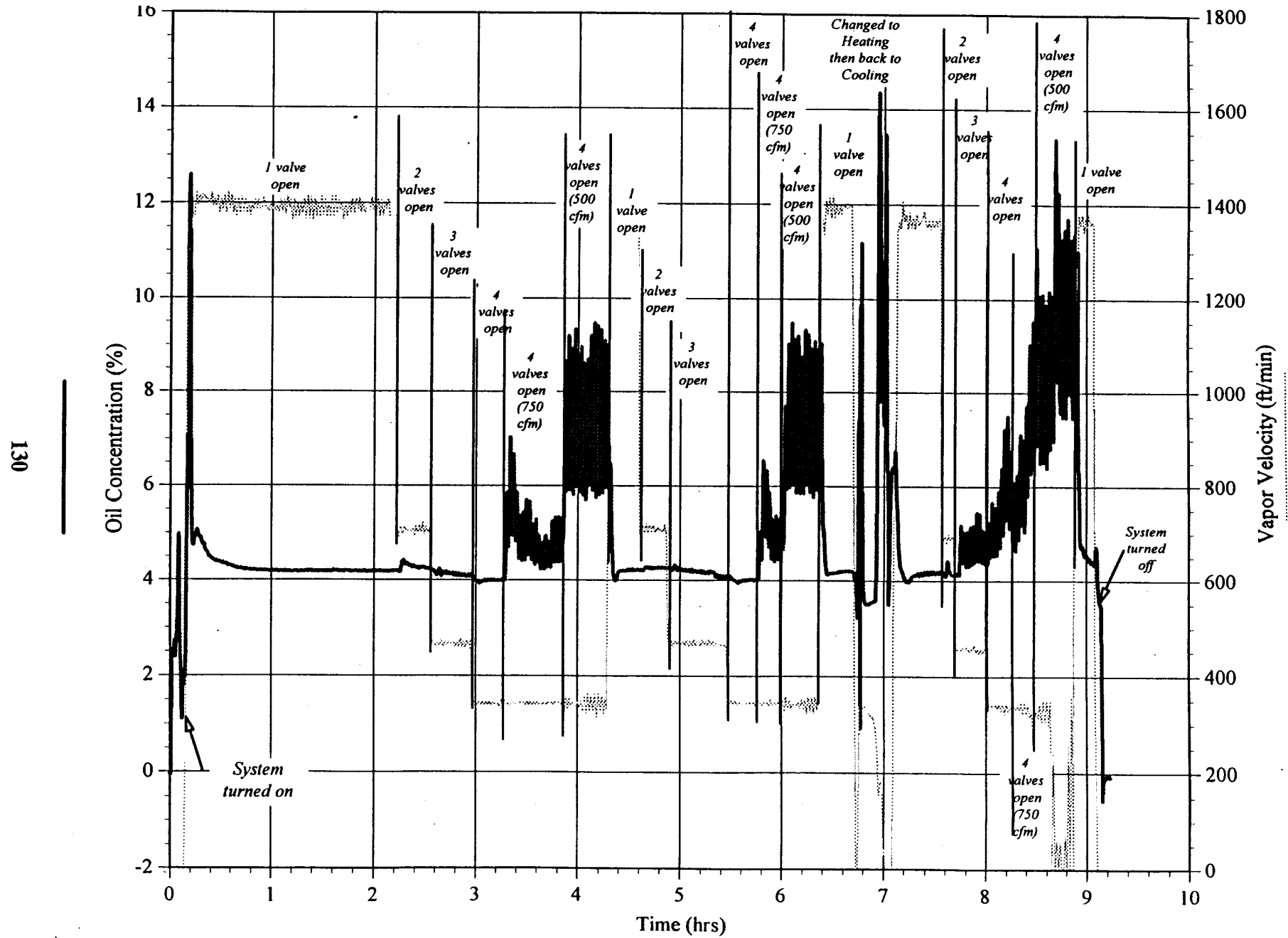


Heat Pump R407C- ICI RL32S Oil Circulation Tests (31-33)

Cooling Mode - Oil Injection

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Oil Flows

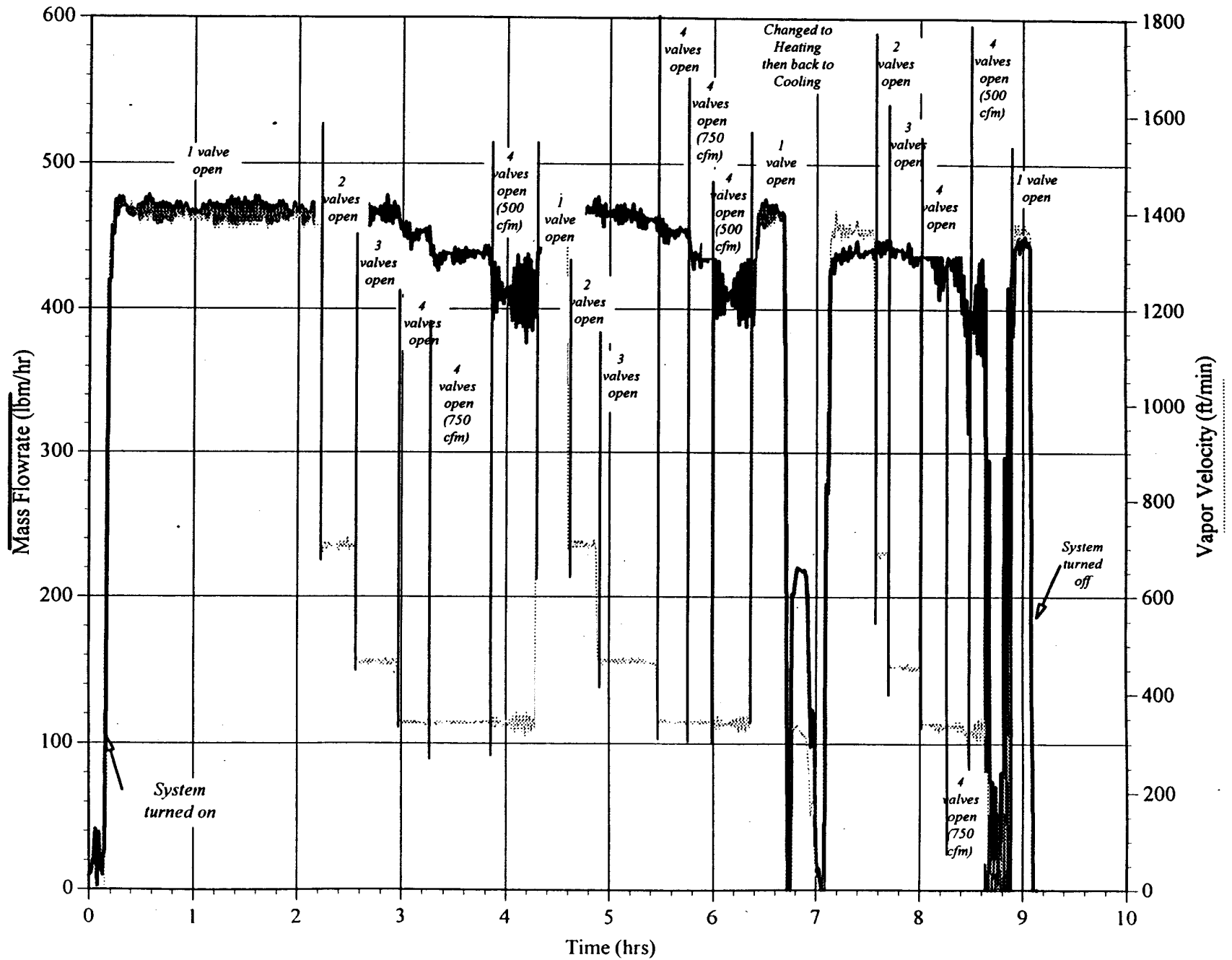


Heat Pump R407C- ICI RL32S Oil Circulation Tests (31-33)

Cooling Mode - Oil Injection

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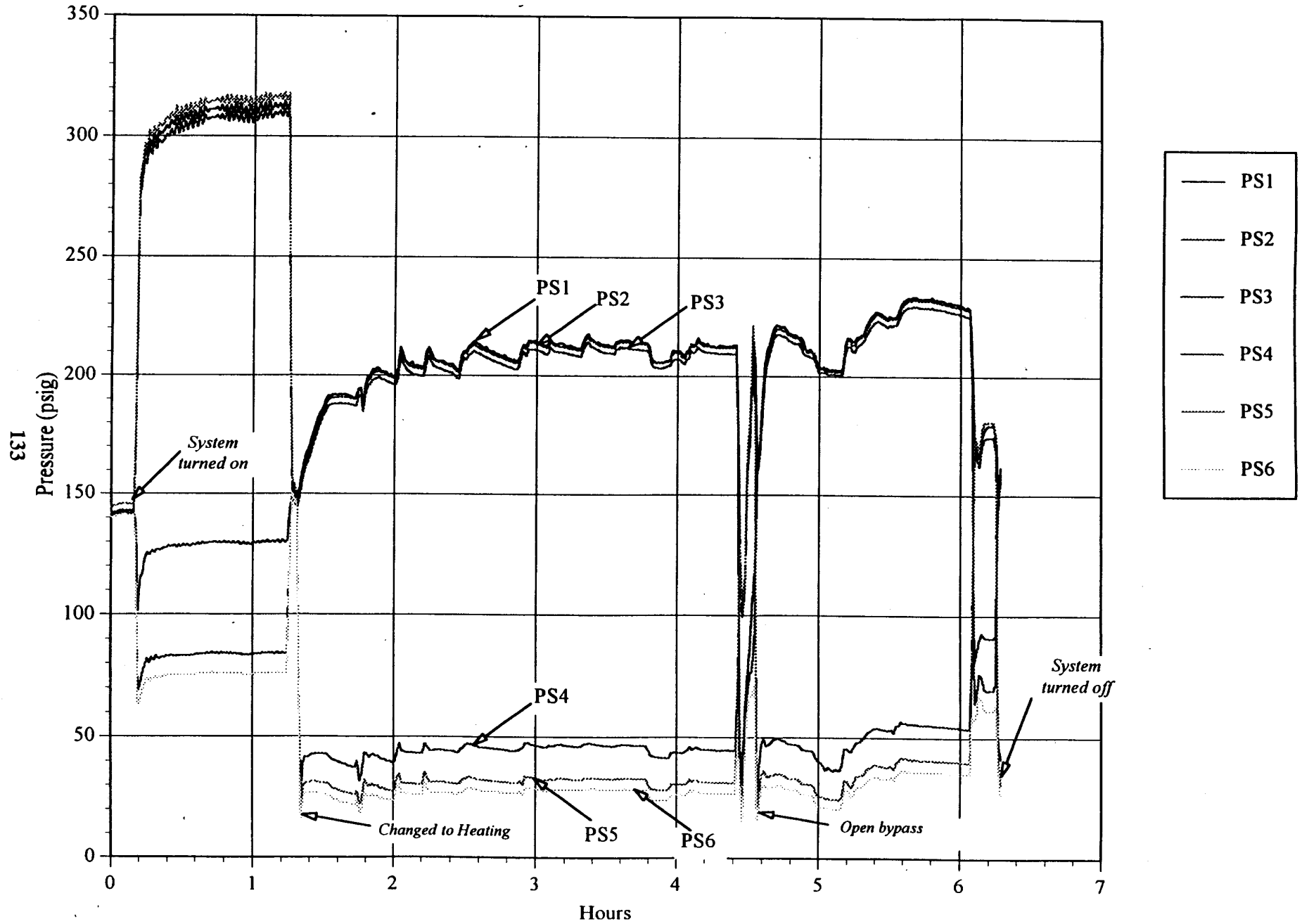


Heat Pump R407C -ICI RL32S Oil Circulation Test (34)

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Heating Mode - No Oil Injection

System Pressures

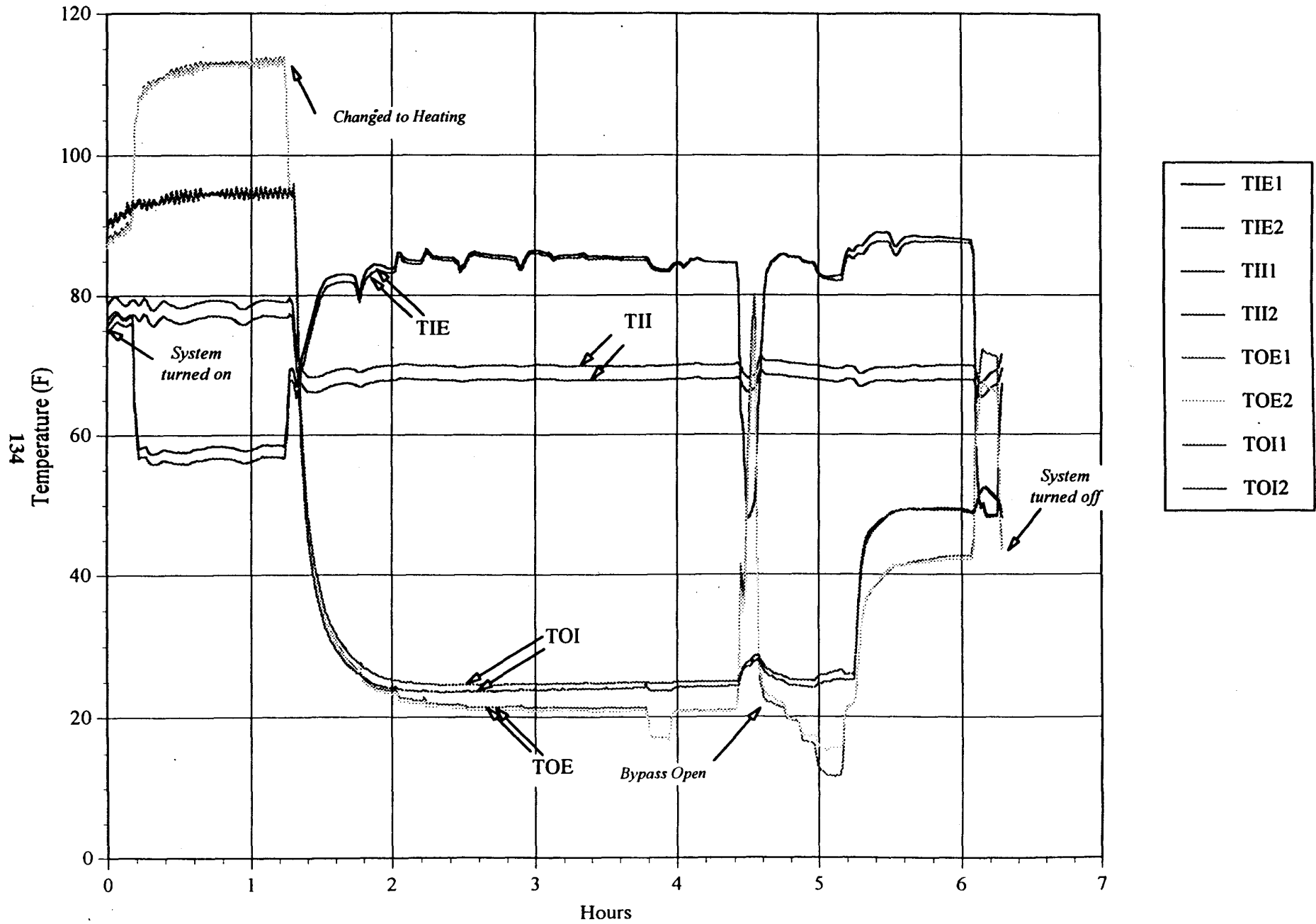


Heat Pump R407C -ICI RL32S Oil Circulation Test (34)

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Heating Mode - No Oil Injection

Air Side Temperatures



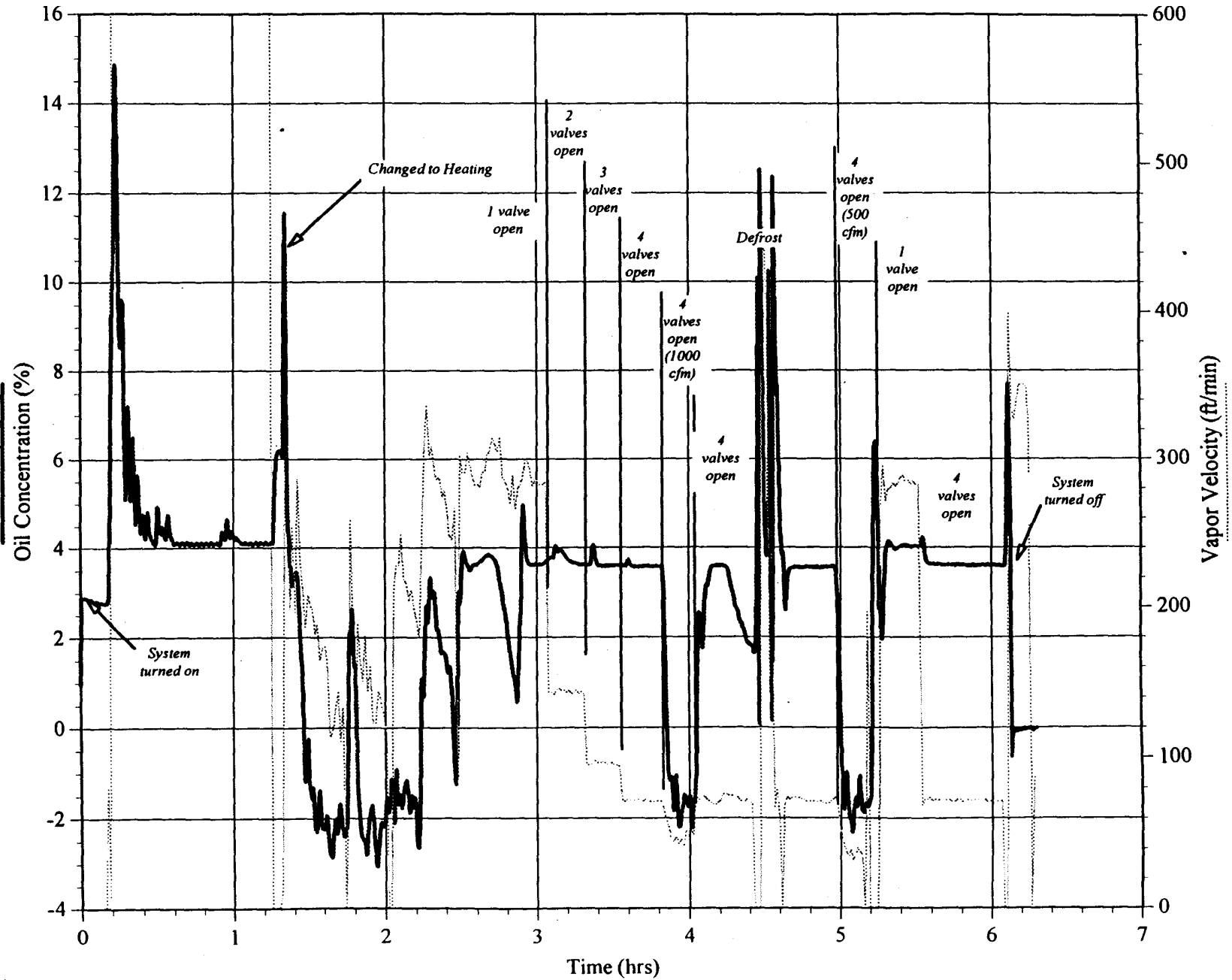
Heat Pump R407C -ICI RL32S Oil Circulation Test (34)

Heating Mode - No Oil Injection

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Oil Flows

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Heat Pump R407C-ICI RL32S Oil Circulation Test (34)

Heating- Mode - No Oil Injection

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