advancedligo

DCC Number: E070245-00-V
Date Prepared: 10/19/2007

Originator	Cognizant Engineer	Ext./Phone#	Project	Account Number
Name Kyle Ryan	Name Kyle R/Vagesh P	509-372-8129/8169	ELIGO_HVE	

Dwg/Part Number	Rev	Part Description / Material	Serial Number	Qty
#254		Viton O-Ring/ V700-75(see attached spec sheet)		10
#358		Viton O-Ring/ V700-75(see attached spec sheet)		10

N.B.: According to Bob Taylor, there are 40 viewport o-rings (not 20 as indicated here. (D. Coyne)

N.B.: According to Bob Taylor, this traveler and associated bake load also includes 400 o-rings for earthquake stops that are ~0.25" in diameter. (D. Coyne)

Used In (next higher assembly):	

Vendor Name	PO/Contract Number
Atlantic Rubber	

Data Package, Receiving/Inspection Remarks:

Inspection Required Y/N	Visual Damage Y/N	Comments	Name/ Initials	Date Comp.

Process Flow:

#	Operation	Start Date	Work Area	Instructions	Name/ Initials	Date Comp.
1	Clean				Bob Taylor	Digitally signed by Bob Taylor DN: cn=Bob Taylor, o=Caltech, ou=CIT LIGO, email=taylor_r@ligo.caltech.edu, c=US Date: 2007.11.06 10:06:51 -08'00'
2	Vacuum Bake				Bob Taylor	Digitally signed by Bob Taylor DN: cn=Bob Taylor, o=Caltech, ou=CIT LIGO, email=taylor_r@ligo.caltech.edu, c=US Date: 2007.11.06 10:07:00 -08'00'
3	Control Point			Review/Approve RGA scan D11207_Viton	Dennis Coyne	Digitally signed by Dennis Coyne DN: cn=Dennis Coyne, o=LIGO, ou=Caltech, email=coyne@ligo.caltech.edu Reason: I am approving this document Date: 2008.01.15 22:54:46 -08'00'
4	Wrap & Tag vacuum clean parts				Bob Taylor	Digitally signed by Bob Taylor DN: cn=Bob Taylor, o=Caltech, ou=CIT LIGO, email=taylor_r@ligo.caltech.edu, c=US Date: 2007.11.06 10:07:09 -08'00'

N.B.: A copy of this traveller must be submitted to the DCC each time the original is shipped with the associated part(s) and when the traveller has been completed.

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#	Operation	Start Date	Work Area	Instructions	Name/ Initials	Date Comp.
5	Ship and Deliver/File paperwork			Please send to: 5 each of the Viton O-rings to LHO and LLO File one copy of traveler with the DCC. **Note: Ship original traveler with these parts.**	Bob Taylor Digitally signed by Bob Taylor DN: cn=Bob Taylor, o=Caltech, ou=CIT LIGO, email=taylor_r@ligo.caltech.edu, c=US Date: 2007.11.06 10:12:09 -08'00'	
END: Go to Traveler or procedure associated with next higher assembly processing						

Special Instructions (Handling/Packaging Constraints, Remarks, etc.) or Notes:

10/25/2007 Packaged O-Rings and mailed to CalTech ATN: Bob Taylor
- Kyle Ryan

The viton outgassing spectrum appears to be poor (high); There is significant signal in the RGA above background for the cracked hydrocarbon signature AMUs. Compare to T970168-00 (specially formulated viton/fluorel) where unbaked is 9e-13 torr-l/s/cm2 and baked is 4e-13 torr-l/s/cm2. The cracked hydrocarbon (flag AMU) outgassing rate for this traveller is 7e-14 torr-l/s/cm2.

N.B.: A copy of this traveller must be submitted to the DCC each time the original is shipped with the associated part(s) and when the traveller has been completed.

advancedligo	DCC Number: E070236-00-D
	Date Prepared: 10/11/07

Required Y/N	Y/N			

Process Flow:

#	Operation	Start Date	Work Area	Instructions	Name/ Initials	Date Comp.
1	Clean		Caltech	Clean and bake per ligo document E960022-B		
2	Vacuum Bake					
3	Control Point			Review/Approve RGA scan		
4	Wrap & Tag vacuum clean parts					
5	Ship and Deliver/File paperwork			Please send to: When cleaned these parts need to go to LLO File one copy of traveler with the DCC. **Note: Ship original traveler with these parts.**		
END: Go to Traveler or procedure associated with next higher assembly processing						

Special Instructions (Handling/Packaging Constraints, Remarks, etc.) or Notes:

These are parts for the L1 HAM.
Parts will need to go to the Livingston site when cleaned. Parts are needed at Livingston by 11/13/07.

N.B.: A copy of this traveller must be submitted to the DCC each time the original is shipped with the associated part(s) and when the traveller has been completed.

SPEC SEALS
SPECIFICATION SEALS COMPANY

SPEC SEALS TECHNICAL REPORT
V700-75 BLACK ASTM SPEC VITON COMPOUND

GENERAL PROPERTIES

VITON is DuPont-Dow Elastomer's trade name for Fluorocarbon Elastomers. These compounds offer the best resistance to a combination of chemicals, weather, and compression set over a temperature range of -20F to +400F. SPEC SEALS' V700-75 meets all popular ASTM D2000/SAE J200 Specifications.

SPEC SEALS V700-75

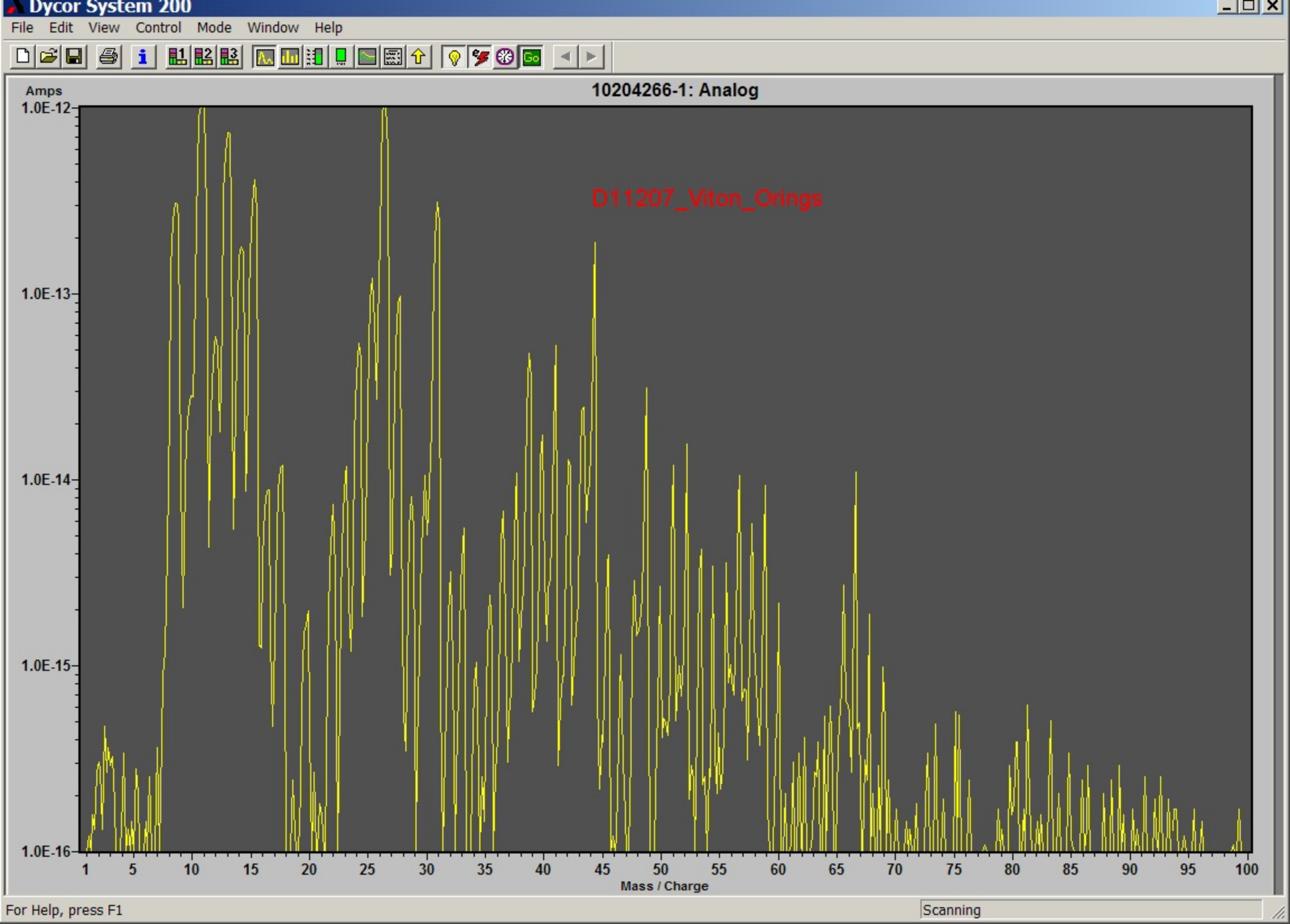
ASTM Designation	ORIGINAL PROPERTIES	ASTM D2000 SPECIFICATION	LABORATORY PROPERTY
	Durometer, Shore A	75 +/- 5	76
	Tensile, psi (MPa), Minimum	1450 (10)	1773 (12)
	Elongation, % Minimum	150	220
	Specific Gravity	-	1.85
A1-10	HEAT AGE, 70 HRS @ 250 C		
	Durometer Change, Points	+10	+2
	Tensile Strength Change, % Maximum	-25	+5
	Elongation Change, % Maximum	-25	-8
B38	COMPRESSION SET, 22 HRS @ 200 C		
	Original Deflection, % Maximum	15	10.8
C12	RESISTANCE TO OZONE		
	ASTM D1171, Method B	No Cracks	Pass
C20	RESISTANCE TO OUTDOOR AGING		
	ASTM D1171	No Cracks	Pass
EF31	FUEL AGE, 70 HRS @23C in Reference Fuel C		
	Durometer Change, Points	+/-5	-1
	Tensile Change, % Maximum	-25	-14
	Elongation Change, % Maximum	-20	-12
	Volume Change, %	0/+10	+3
EO88	FLUID RESISTANCE, 70 HRS @200C in Stauffer 7700/SAE Fluid No. 2		
	Durometer Change, Points	-15/+5	-6
	Tensile Change, % Maximum	-40	-21
	Elongation Change, % Maximum	-20	-14
	Volume Change, % Maximum	+25	+8
F15	LOW TEMPERATURE BRITTLENESS		
	ASTM D2137, Method A, 9.3.2		
	3 Minutes @ -25 C	Non-Brittle	Pass

SPECIFICATIONS MET

ASTM D2000-01 Grade M6HK810 A1-10 B38 C12 C20 EF31 EO88 F15

MANUFACTURER'S CROSS REFERENCE

V700-75 is designed to meet or exceed the properties of these popular Viton Compounds:
V747-75, 19357, V14-75, 9009-75, F13664, 514AD.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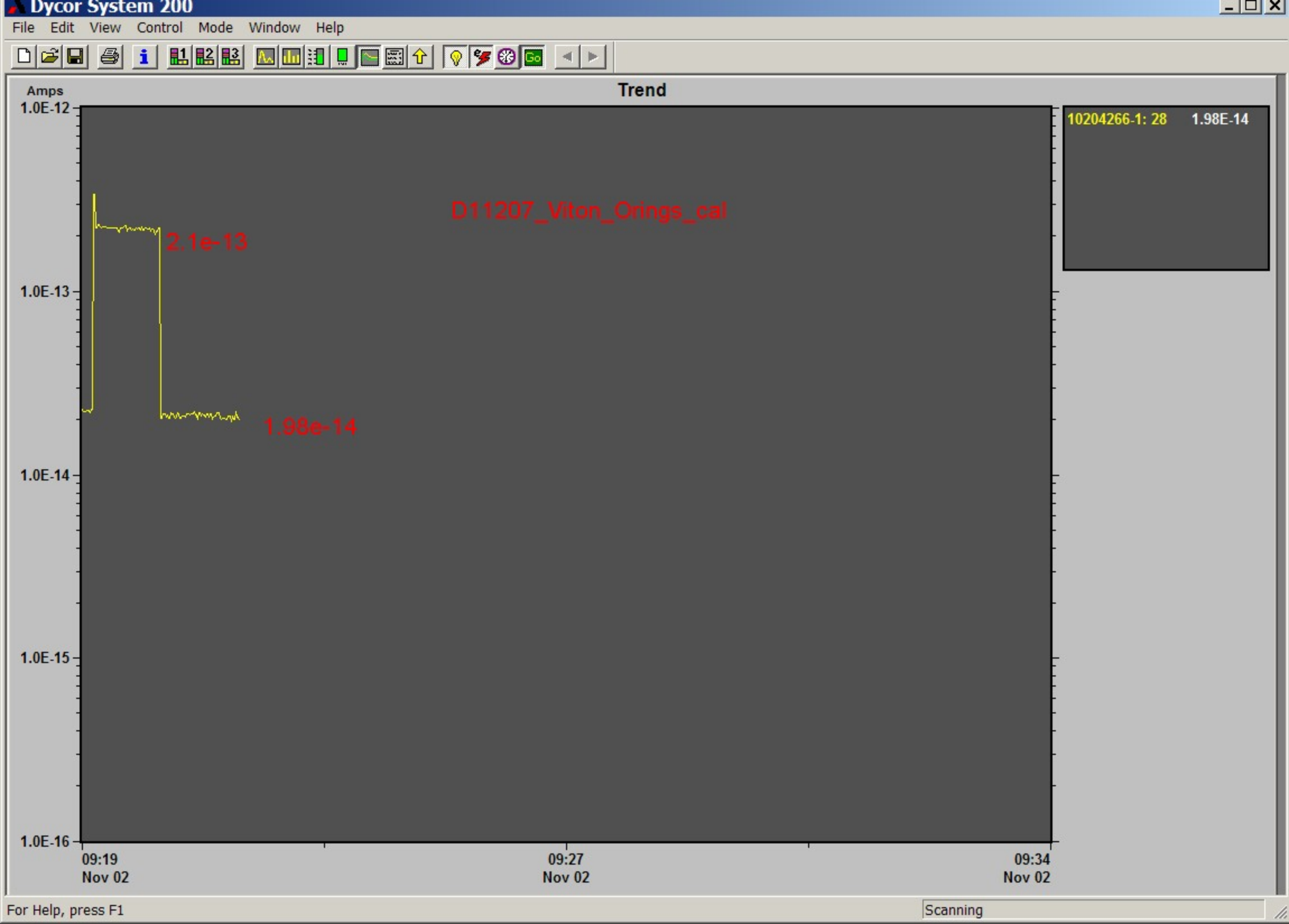
Scanning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2.1e-13
1.98e-14
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09:27
Nov 02
09:34
Nov 02
For Help, press F1
Scanning

Pressure Contribution from Flag Hydrocarbons

40M Lab RGA Scan Results

Job# D11207 Description: Viton Orings Date: 11/2/2007

Oven Used: D

AMU 41	1.90E-14	amps	from RGA scan listing
AMU 43	2.10E-14	amps	from RGA scan listing
AMU 53	3.50E-15	amps	from RGA scan listing
AMU 55	4.00E-16	amps	from RGA scan listing
AMU 57	1.50E-14	amps	from RGA scan listing
Sum Flag H/C AMUs	5.89E-14	amps	
Calib leak rate	2.36E-10	torr l/s	(Argon)
AMU 40 (w/leak open)	2.10E-13	amps	
AMU 40 (background)	1.98E-14	amps	
Calib leak contributes	1.90E-13	amps	= (w/leak open) - (background)
Flag H/C Outgassing	7.308E-11	torr l/s	= (Sum Flag H/C AMUs) x (Calib leak rate)/(Calib leak contrib.)
Test item surf area	1.04E+03	cm2	
Normalized outgassing	7E-14	torr l/s-cm2	= Flag H/C Outgassing/Test item surf area

Full description: 40 View port window Orings and 400 1/4" Dia. Orings

Pre-scan bake: 180C for 48 Hrs