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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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Originally Issued: November 21, 2005

Reply to: Frank Farber
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Unapproved Minutes of the November 9, 2005 Sequence IVA Surveillance Panel Meeting held in San Antonio, TX

The meeting was called to order at 9:00 am by Chairman Bill Buscher. A membership list was circulated for members & guests to sign in. It's shown in Attachment 1.

Agenda Review

Pat Lang is Action & Motion recorder.

The Agenda was accepted as shown on Attachment 2.

Membership Changes

Perkin Elmer Changes to Intertek Automotive Research.

Meeting Minute Status

The May 19, 2005 meeting minutes were approved by the surveillance panel.

Review of Action Items from Last Meeting

Chairman Buscher reviewed the Action Items from the May 19, 2005 meeting.

Action Item: Chairman will send Tracy King's e-mail regarding update on the future parts supply of IVA engine. This letter will be included in the meeting minutes.
Done. Tracy's email has been included in meeting minutes.

Action Item: Panel review RSI and TMC data in 6 months to make sure no shifts have occurred. Chairman will ask ACC to provide ACW time plot of individual data points including engine block and head runs. Report data from December 2004 through November 2005.
Incomplete. Insufficient replicate data for this period. Will review in six months and report at next Surveillance Panel meeting

Action Item: Camshaft round-robin, TMC will be involved now; Chairman to work on picking a cam. Measure cam, print traces and ship those to the TMC to keep the information confidential. Cam will get sent to the next lab by the current lab. This to be initiated in the next couple of weeks.
Done. Data reviewed by TMC and Surveillance Panel chairman, summary will be presented in this meeting.

Motion: Add a new form to the test report to include all of the appropriate lot numbers for rocker arm, camshaft and cylinder heads (see Attachment 3). The chairman will work with the TMC to work out the details.
Buscher/Clark; passed unanimously
Incomplete. Proposed form has been generated and to be reviewed during this meeting. Sequence IVA Information Letter and Report Packet Revision Notice to be issued.

Action Item: Chairman to analyze GF-3 and GF-4 test usage. Contact ILSAC regarding the inclusion of the IVA in GF-5 and see if we can get feedback on the number of test that could be potentially needed for GF-5. Inquire regarding what the new limit will be for the test to facilitate estimating parts needed for the category.
Incomplete. No feedback received from ILSAC to-date. Will report at next Surveillance Panel meeting.

Action Item: Contact Tim Scully at Nissan USA concerning the hardware commitment through 2008.
Done. Update during Test Hardware Report of this meeting.

Action Item: Chairman of the LTMS, Ben Weber to investigate the pros and cons of the new IIIG LTMS system and study how well it could potentially be applied to the IVA. Report back to the group by the November meeting.
Incomplete. Will report at next Surveillance Panel meeting.

Motion: Calculate severity adjustments and intermediate precision standard deviations based only on chartable 1006-2 data. Effective on all references completed on or after July 1, 2005.
Farber/Buscher, passed unamiously
Done. TMC Memorandum 05-046 issued on June 3, 2005 and Sequence IVA Information Letter No. 05-2 issued on June 8, 2005.

Fuel Supplier Report

Bob Rumford presented data from the last 3 fuel batches (see Attachment 4).
All items were within specification. No fuel problems noted.

TMC Report

No report given. Report is posted on TMC website.

RSI Report

No RSI attendance. Reports have been previously emailed to panel members and posted to the RSI website.

Test Hardware Report

There are no current shortages of test hardware (see Attachment 5).
2005 part orders have been submitted.
The production of the KA24E will be terminated in 2008.

Nissan via email to Susan Douglas(Nissan) states "NML will continuously supply Oil Test Program parts until maybe FY2014".

The chairman is continuing to investigate extending the life of the IVA to 2014. Nissan will solicit parts for 2006, 2007 and 2008.

2005 Camshaft Wear Measurement Round Robin

Rich Grundza presented the round robin results (See Attachment 6). The Chair voiced concern that the spread in measurements was greater than desired. Review of the data indicates that a Metrology Workshop needs to be scheduled. It appears that some labs

are swapping the before and after locations. Exhaust lobe measurements show the most discrepancy. Southwest will host a workshop in January. After the workshop a follow-up round robin will be conducted.

Proposed test Procedure Changes

Dan Worcester proposed several changes to the test method. The motion (see Motion on Page 5) was accepted.

Scope & Objectives

See Attachment 7.

New Business & Old Business

None.

The meeting was adjourned at 10:30 am.

Motions and Action Items
As Recorded at the Meeting by Pat Lang

Action Item: Panel to review RSI and TMC data in 6 months to make sure no shifts have occurred. Chairman will ask ACC to provide ACW time plot of individual data points including engine block and head runs. Report data from December 2004 through May 2006.

Action Item: TMC to incorporate the new hardware page, effective early January.

Action Item: Chairman to analyze GF-3 and GF-4 test usage. Contact ILSAC regarding the inclusion of the IVA in GF-5 and see if we can get feedback on the number of test that could be potentially needed for GF-5. Inquire regarding what the new limit will be for the test to facilitate estimating parts needed for the category.

Action Item: Chairman of the LTMS, Ben Weber to investigate the pros and cons of the new IIIG LTMS system and study how well it could potentially be applied to the IVA. Report back to the group by the May meeting.

Action Item: Labs to consider whether or not they want to release their current inventory level of parts to chairman to be discussed at each surveillance panel meeting.

Action Item: Chairman to continue to solicit Nissan for information on future hardware supply.

Action Item: Chairman to coordinate a metrology workshop in the first quarter of 2006 (target the end of January). SwRI has offered to be the host. The goal is to have this workshop completed before the May 2006 surveillance panel meeting. A follow-up cam measurement round-robin will be conducted after the workshop.

Motion

Recommend to the Surveillance Panel the following procedure changes as a motion:

- Remove all references to the number of tests on the block and head from the procedure and add to the Annex.
- Work with TMC to define tolerances for all thermocouples.
- Add a note similar to the VG procedure to allow a test to be valid with less that 2 hours of missing test data.
- Change the wording on Section 6.3.5.1 to: “ Maintain the fuel temperature to the fuel rail below 50 º C.
- Section 10.4.1 Change to: “ Internally clean the engine coolant system each time a new engine is installed by a chemical flushing method
- Section 11.3.5.2 Change to: “The torque target can be adjusted to improve load control for the 2 to 1 and 1 to 2 speed ramps.

- Section 11.3.5.2 Replace the PCV valve when changing the cylinder head or engine.

Worcester/Bowden 8/0/1

The motion passed, effective date is 11/9/05

NON-MEMBER MAILING LIST
ASTM IVA SURVEILLANCE PANEL

May 19, 2005

NAME	COMPANY-ADDRESS-PHONE-FAX-EMAIL	SIGNATURE
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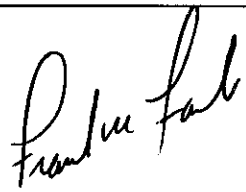
Carter, Brad	PerkinElmer Fluid Sciences 5404 Bandera Road San Antonio, TX 78238-1993 Phone No.: Fax No.: 210-523-4607 Email: brad.carter@perkinelmer.com	
Farber, Frank	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206 Phone No.: 412-365-1030 Fax No.: 412-365-1047 Email: fmf@astmtmc.cmu.edu	

NON-MEMBER MAILING LIST
ASTM IVA SURVEILLANCE PANEL

May 19, 2005

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May 19, 2005

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Simkins, Russell	Conoco Inc. 1000 South Pine, 6617RW P.O. Box 1267 Ponca City, OK 74602-1267 Phone No.: 580-767-6758 Fax No.: 580-767-4534 Email: russell.e.simkins@usa.conoco.com	
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NON-MEMBER MAILING LIST
ASTM IVA SURVEILLANCE PANEL

May 19, 2005

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LANG, PATRICK	SwRI Phone No.: Fax No.: Email: :	Pat Lang
	Phone No.: Fax No.: Email: :	
	Phone No.: Fax No.: Email: :	

Attachment 2

Sequence IVA Surveillance Panel
San Antonio, TX
SwRI, Building 209, Conference Room 103
November 9, 2005
9:00 a.m. - 12:00 p.m.

A G E N D A

1.	Chairman comments	
2.	Attendance sign-in sheet distribution	
3.	Membership changes	
4.	Motion and Action recorders	
5.	Approval of minutes for 05/19/2005	All
6.	Review action items from last meeting	Buscher
7.	Fuel supplier report – KA24E Green Fuel	Carter
8.	TMC report - *Any questions regarding semi-annual TMC report*	Grundza
9.	RSI report - *Any questions regarding semi-annual RSI report*	Mahoney
10.	Test hardware report	Buscher
11.	2005 camshaft wear measurement round-robin	All
12.	Proposed test procedure changes	Worcester
13.	Review Scope & Objectives	All
14.	Old business	
15.	New business	
16.	Next meeting	
17.	Adjourn	

Sequence IVA Valve Train Wear Evaluation

Hardware Information

Form 10

Laboratory: SR	**Test Number:** 54-0-108	**Oil Code:** CMIR-52633
Formulation / Stand Code: ----		

	Position	Part Number	Lot Number
Rocker Arm	1	A3257-40F06	020916
	2	A3257-40F16	020916
	3	A3257-40F07	020916
	4	A3257-40F06	020916
	5	A3257-40F17	020916
	6	A3257-40F07	020916
	7	A3257-40F06	020916
	8	A3257-40F16	020916
	9	A3257-40F07	020916
	10	A3257-40F06	020916
	11	A3257-40F17	020916
	12	A3257-40F07	020916
Camshaft		A3020-40F01	021015A
Cylinder Head		A1040-40F80	021022
Rocker Shaft, Exhaust		13245-40F10	
Rocker Shaft, Intake		13252-40F10	
Spark Plug		22401-30R15	
Oil Filter		15208-H8904	

PRODUCT: **KA24E TEST FUEL**

PRODUCT CODE: **HF008**

Batch No.: TH1221LS02
TMO No.: 21021721
TMC No.:
Tank No.: 604
Analysis Date: 8/18/2005
Shipment Date:

TEST	METHOD	UNITS	SPECIFICATIONS			RESULTS
			MIN	TARGET	MAX	
Distillation - IBP	ASTM D86	°F	75		95	86
5%		°F				112
10%		°F	120		135	127
20%		°F				151
30%		°F				178
40%		°F				207
50%		°F	200		230	222
60%		°F				230
70%		°F				240
80%		°F				259
90%		°F	300		325	324
95%		°F				347
Distillation - EP		°F	385		415	409
Recovery		vol %		Report		97.9
Residue		vol %		Report		1.0
Loss		vol %		Report		1.1
Gravity	ASTM D4052	°API	58.7		61.2	59.6
Density	ASTM D4052	kg/l	0.734		0.744	0.741
Reid Vapor Pressure	ASTM D323	psi	8.8		9.2	9.1
Carbon	ASTM E191	wt fraction	0.8580		0.8667	0.8659
Carbon	ASTM D3343	wt fraction		Report		0.8658
Sulfur	ASTM D4294	wt %	0.01		0.04	0.02
Lead	ASTM D3237	g/gal			0.05	<0.01
Oxygen	ASTM D4815	wt %			0.05	<0.05
Composition, aromatics	ASTM D1319	vol %			35.0	30.6
Composition, olefins	ASTM D1319	vol %	5.0		10.0	6.4
Composition, saturates	ASTM D1319	vol %		Report		63.0
Oxidation Stability	ASTM D525	minutes	1440			>1440
Copper Corrosion	ASTM D130				1	1
Gum content, washed	ASTM D381	mg/100ml			5	<1
Research Octane Number	ASTM D2699		96.0		97.5	97.1
Motor Octane Number	ASTM D2700			Report		88.2
R+M/2	D2699/2700			Report		92.7
Sensitivity	D2699/2700		7.5			8.9
Net Heat of Combustion	ASTM D240	btu/lb		Report		18327
Color	Visual			Green		Green

APPROVED BY: _____ ANALYST JM/HD

Test Hardware Report

- Hardware Status:
  - No shortage of test hardware.
  - Industry currently using mixture of 2001 and 2002 test kits.
  - 2005 Nissan parts order has been submitted in August 2005. Parts scheduled to be delivered in December 2005/January 2006.
  - 2006 Nissan parts solicitation expected in April 2006/May 2006.

Test Hardware Report

- Extend the life of the Sequence IVA test for inclusion into the ILSAC GF-5 category by one of two possible methods:
  1. Nissan will continue to make Sequence IVA test parts available to the participating ASTM laboratories on an annual basis through the life of the ILSAC GF-5 category.
  2. The participating ASTM laboratories will purchase and stockpile Sequence IVA test parts between now and 2008 to extend the life of the test for the ILSAC GF-5 category.

Test Hardware Report

- Received email from Kiyotaka Nakamura on June 20, 2005 stating:
  - The production of KA24E will be terminated by 2008. I am negotiating with parts service department to keep supplying KA24E to 2015. They did not disagree to supply KA24E. They start to investigate future capability to supply KA24E. It is difficult, however, to estimate the future supplying capability precisely. If we can not supply KA24E to 2015, we would like to ask Seq. IVA surveillance panel to investigate the possibility to purchase KA24E engine for you future use. For example, At 2008, panel members purchase KA24E engines and parts for 7 years use.

Test Hardware Report

- Received email from Susan Douglas on August 23, 2005 stating:
  - I was informed from Mr. Masuda-san (dept. GAP), NML will continuously supply Oil Test Program parts until maybe FY2014.

Sequence IVA

2005 Round Robin

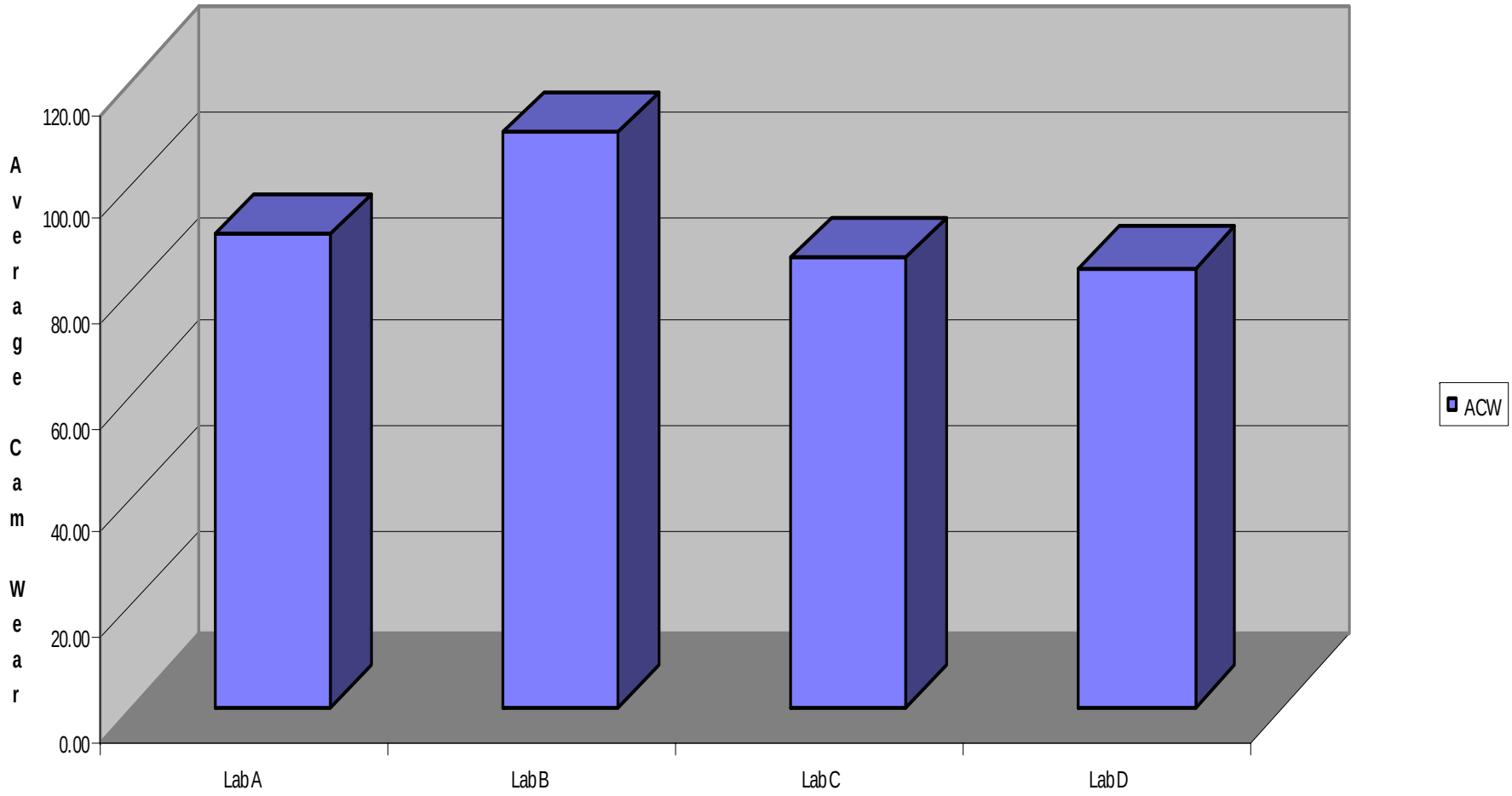
2005 Round Robin

- Results from 4 Laboratories
- One lab used degree wheel while the other three used TEI positioner
- Two labs used PDT-2-505 tracer
- One lab used PDT-6-1520 tracer
- One lab used PDT-2-544 tracer
- Two labs tracer speed of 0.50
- Two labs tracer speed of 0.75

Summary of Results

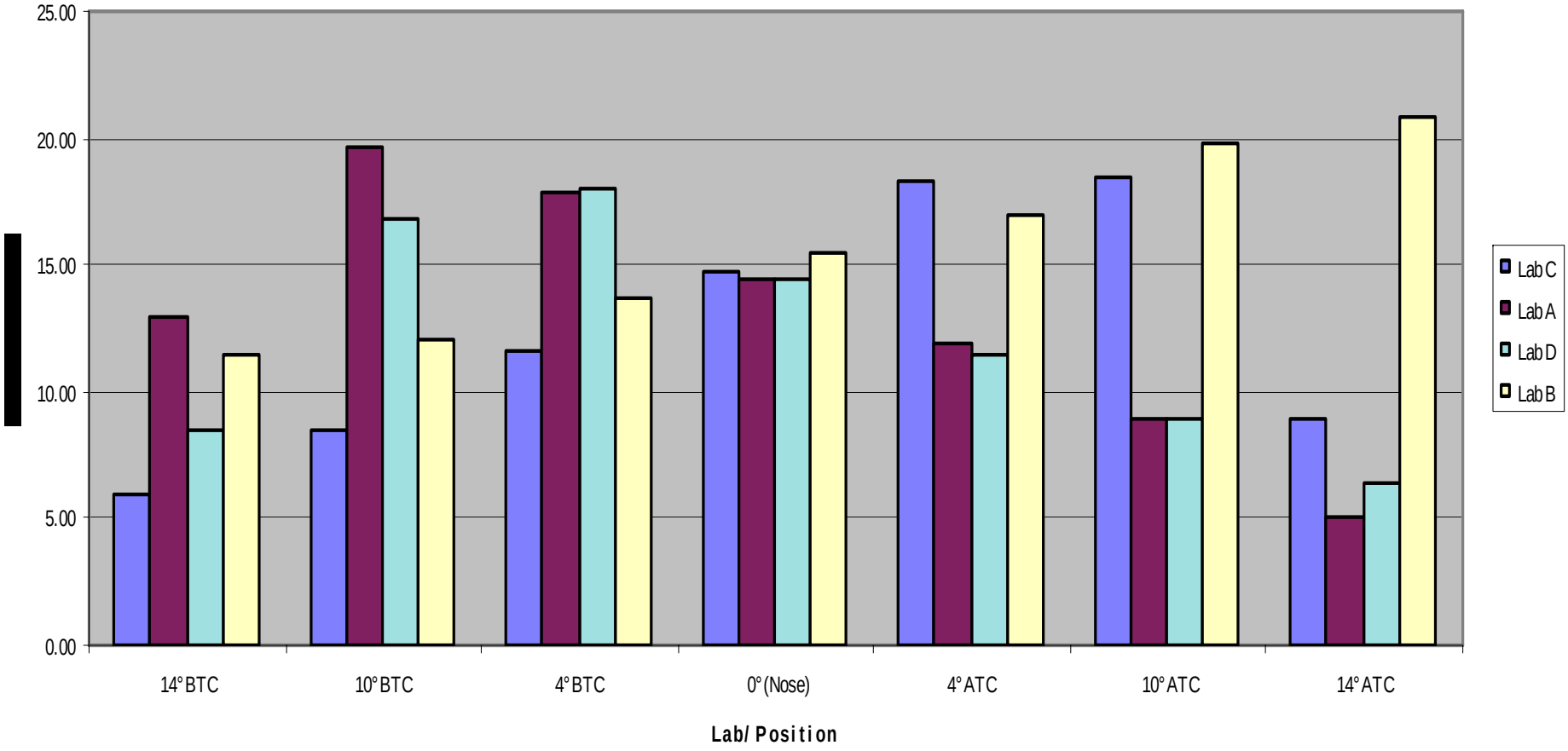
		Lab A	Lab B	Lab C	Lab D
Original Unit Result	µm	90.78	110.30	86.28	84.54
Transformed Result	µm	90.780	110.300	86.280	84.540
Industry Correction Factor	µm	0.000	0.000	0.000	0.000
Corrected Transformed Result	µm	90.780	110.300	86.280	84.540
Severity Adjustment	µm	0.000	0.000	0.000	0.000
Final Transformed Result	µm	90.780	110.300	86.280	84.540
Final Original Unit Result	**µm**	**90.78**	**110.30**	**86.28**	**84.54**

Sequence IVA Round Robin Data
Average Cam Wear Results

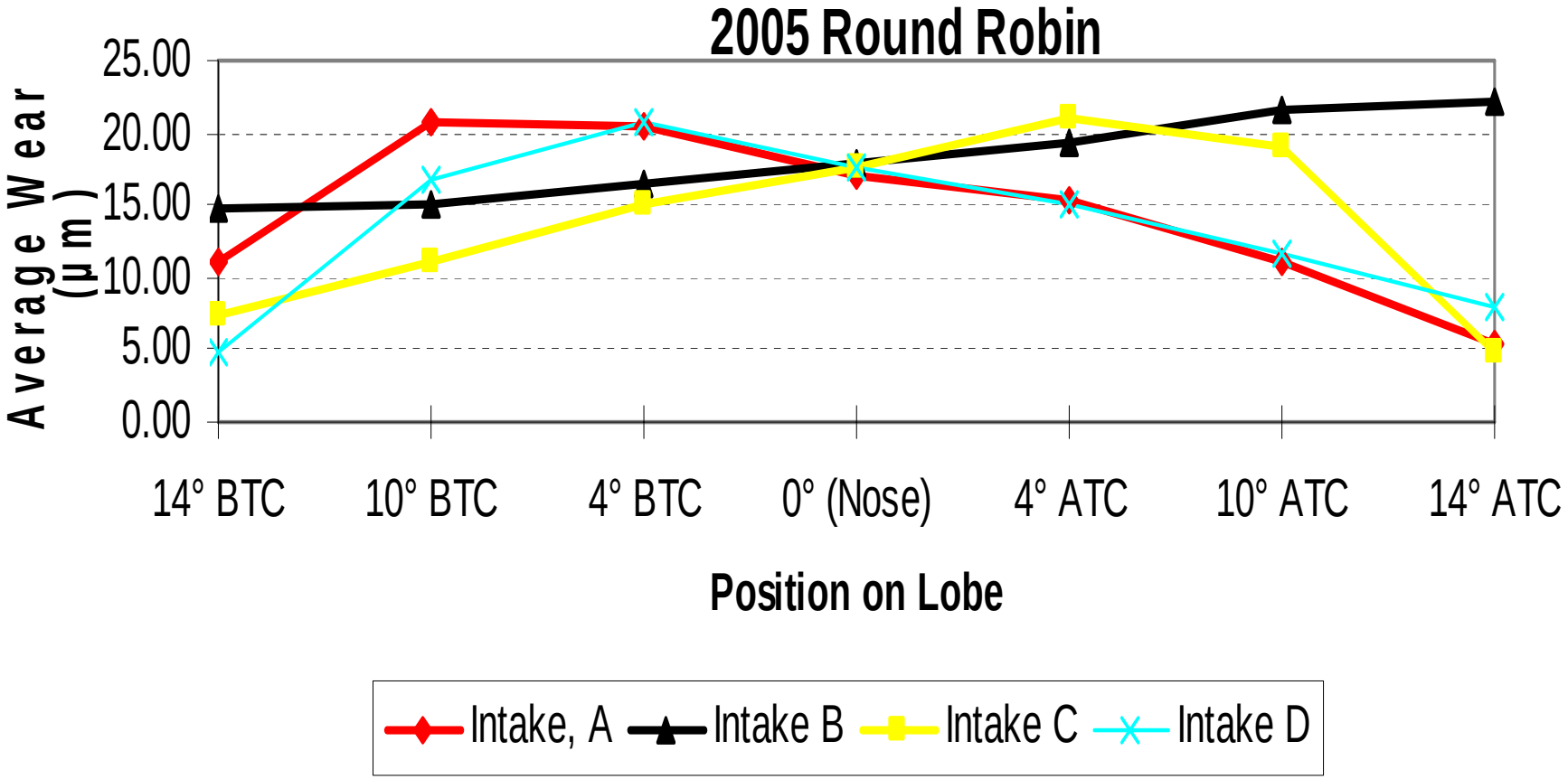


Sequence IVA Round Robin Data

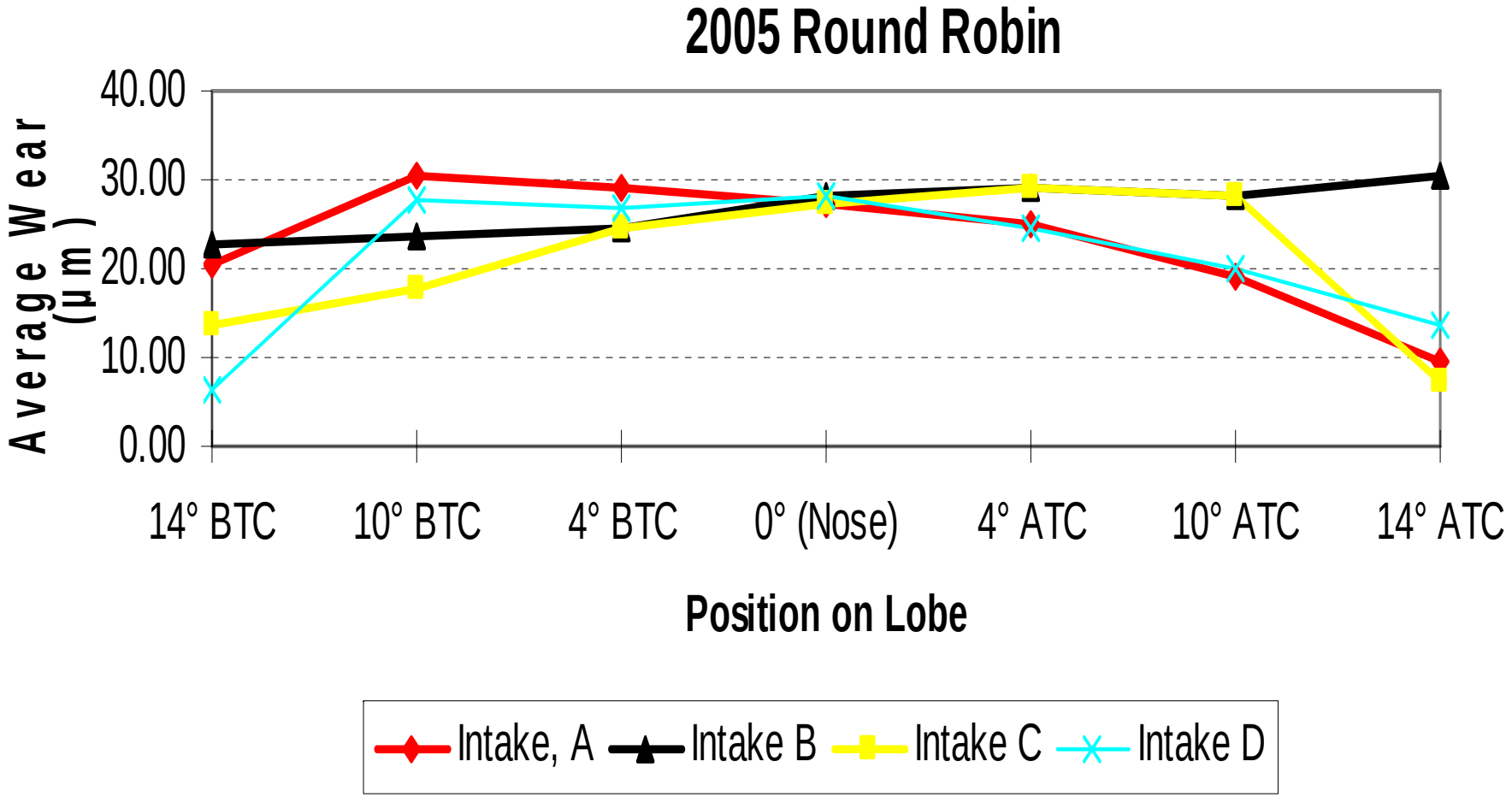
Plot of Wear Average by Position



Sequence IVA: Camshaft Lobe Wear Profiles
Average Intake



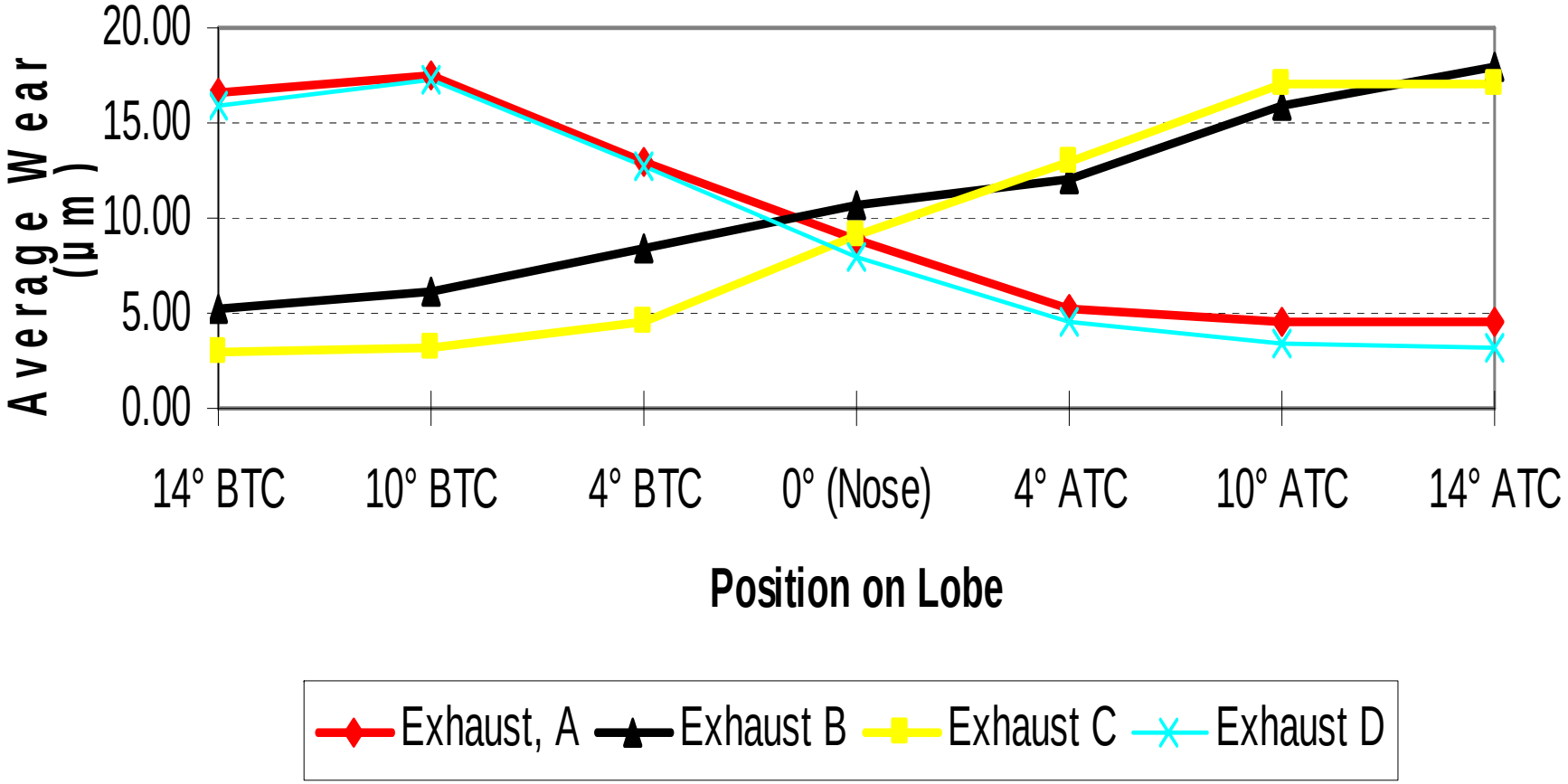
Sequence IVA: Camshaft Lobe Wear Profiles
Maximum Intake



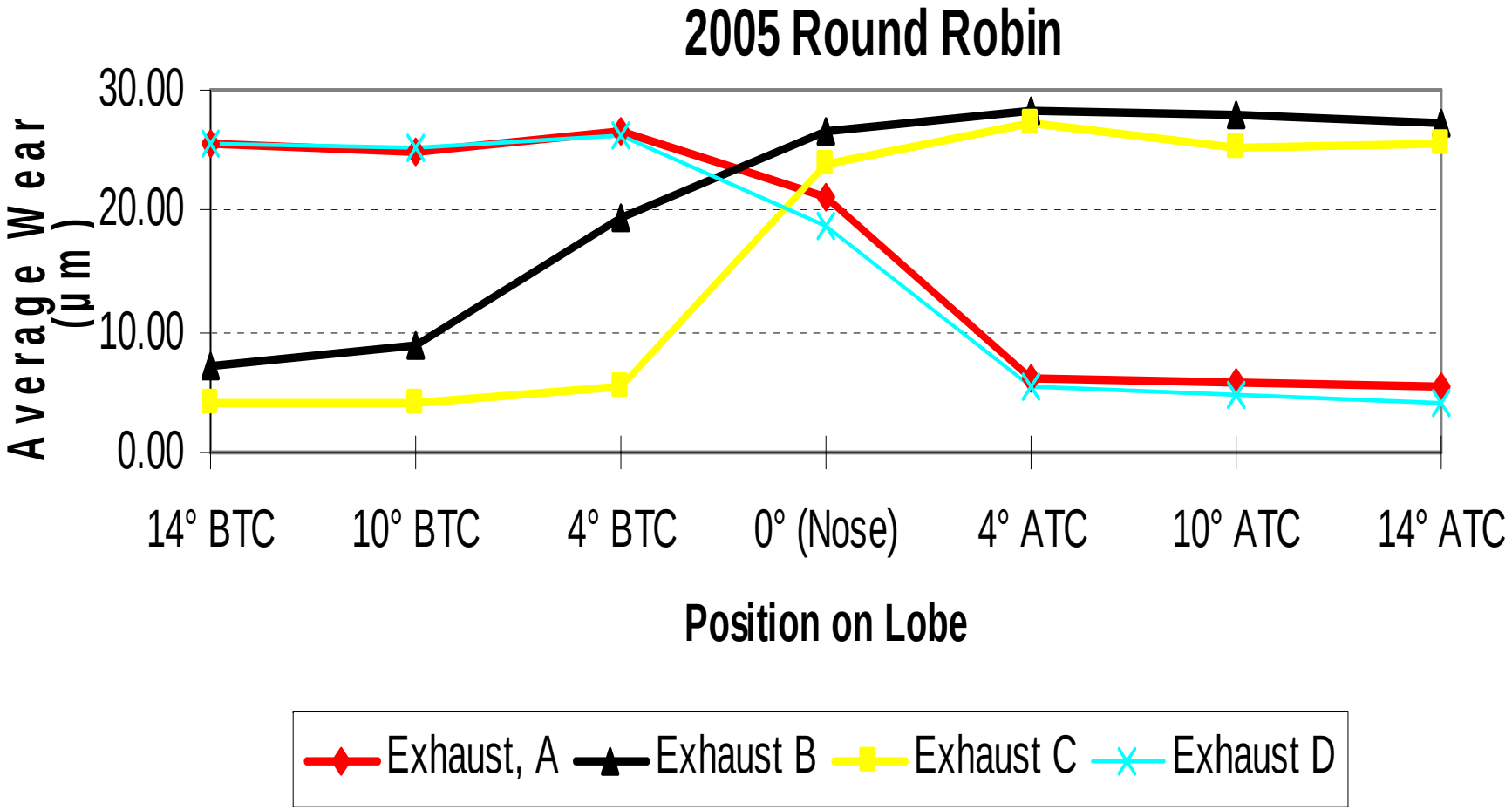
Sequence IVA: Camshaft Lobe Wear Profiles

Average Exhaust

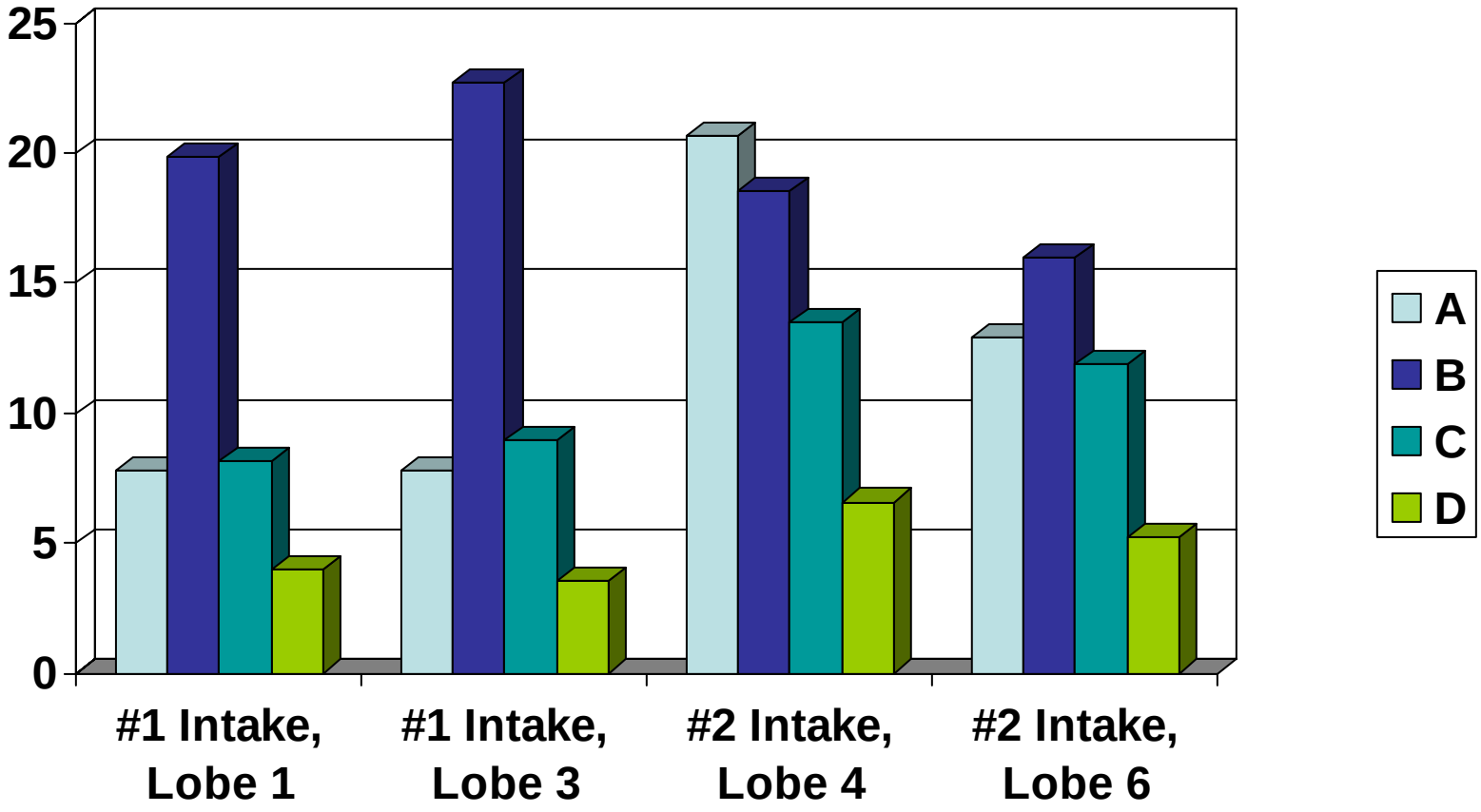
2005 Round Robin



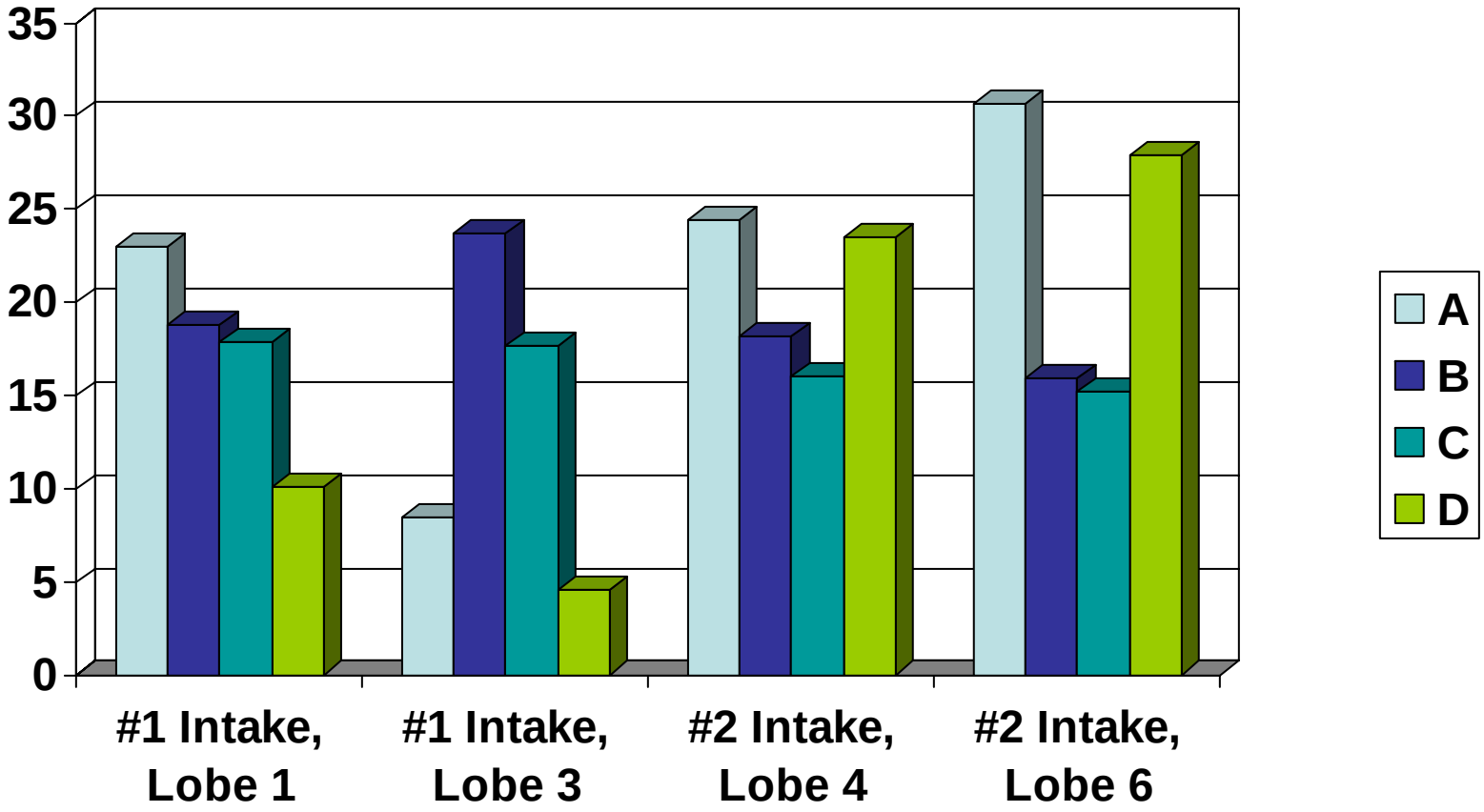
Sequence IVA: Camshaft Lobe Wear Profiles
Maximum Exhaust



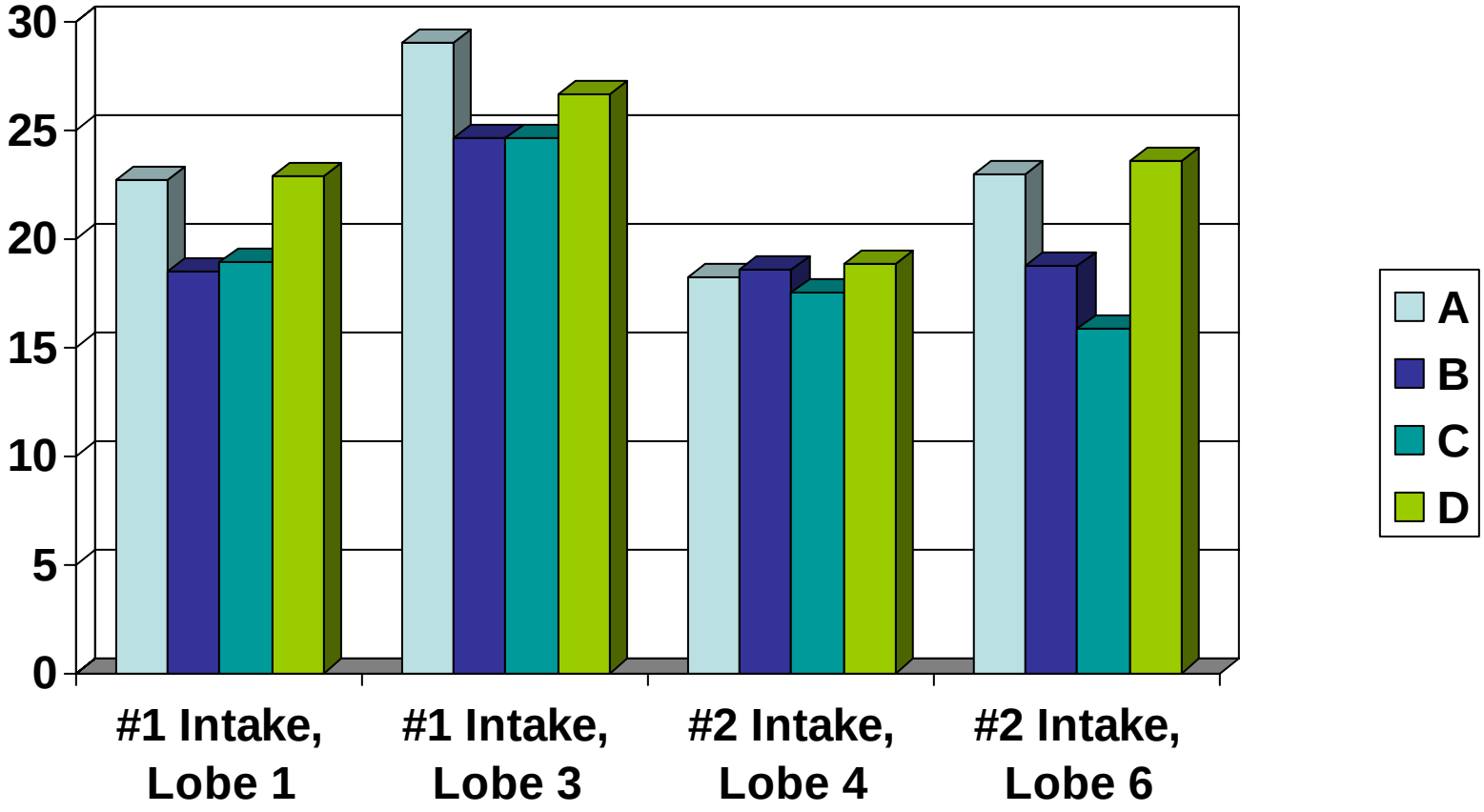
Wear By Lab and Position
14 Degrees Before



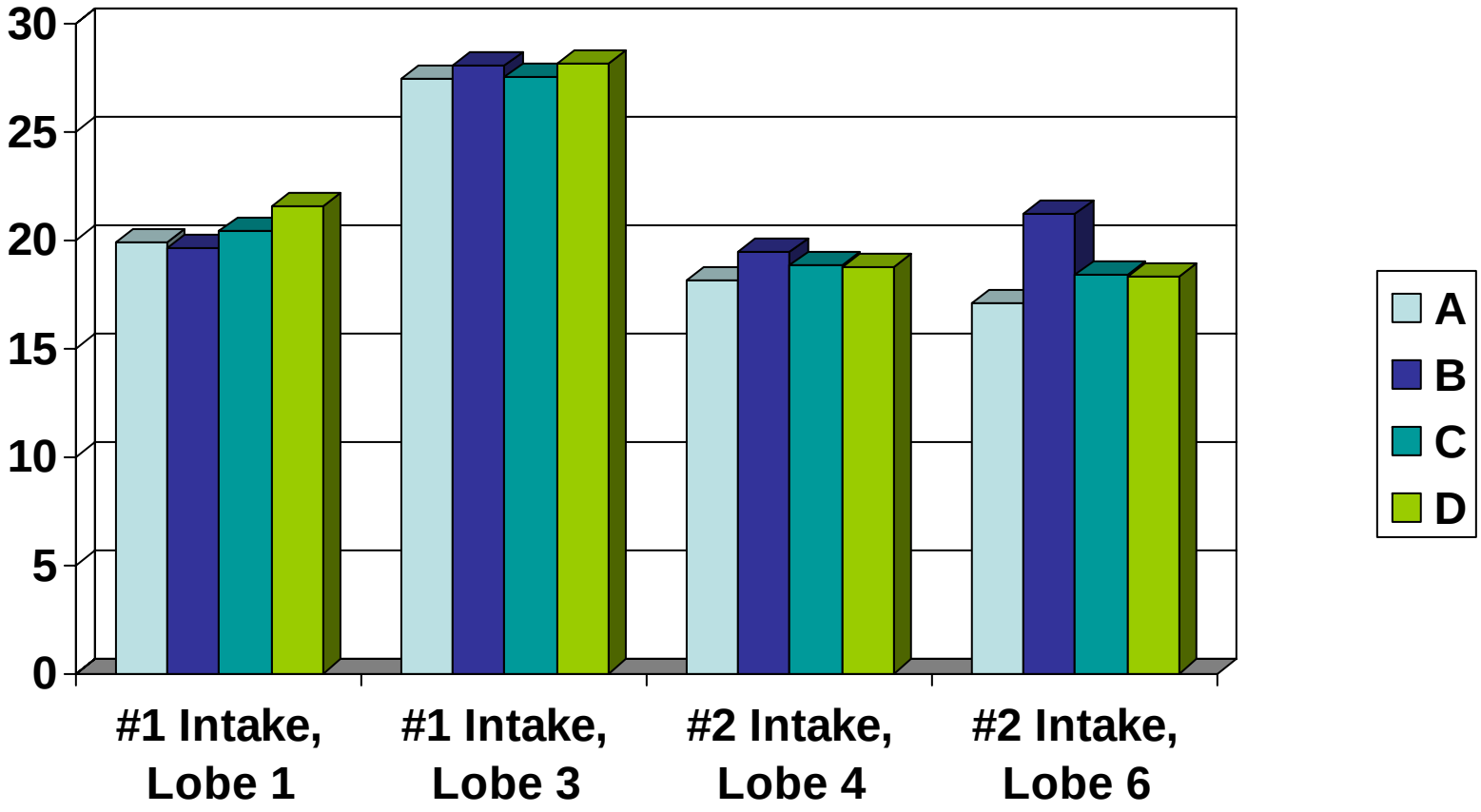
Wear By Lab and Position
10 Degrees Before



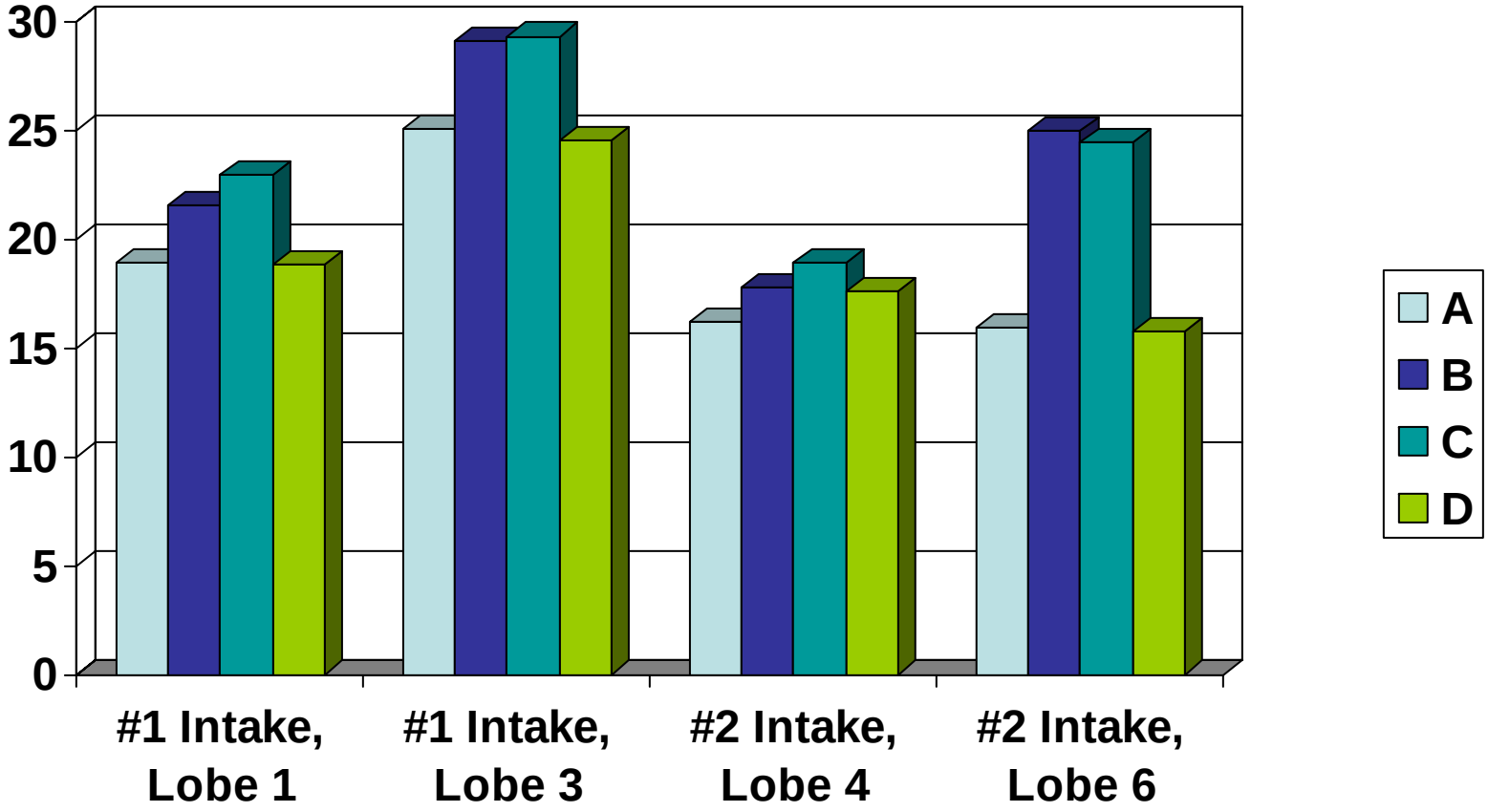
Wear By Lab and Position
4 Degrees Before



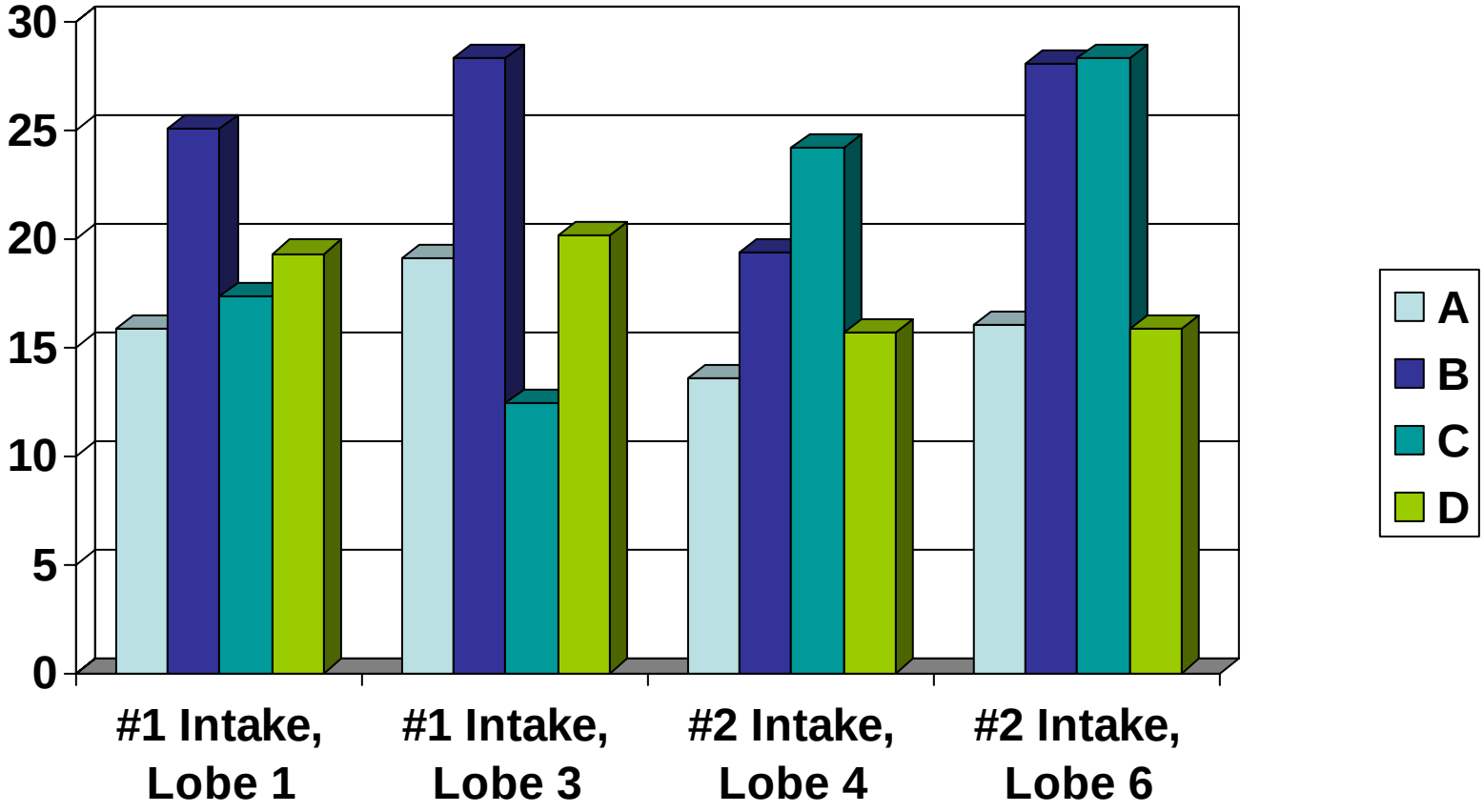
Wear By Lab and Position
Nose



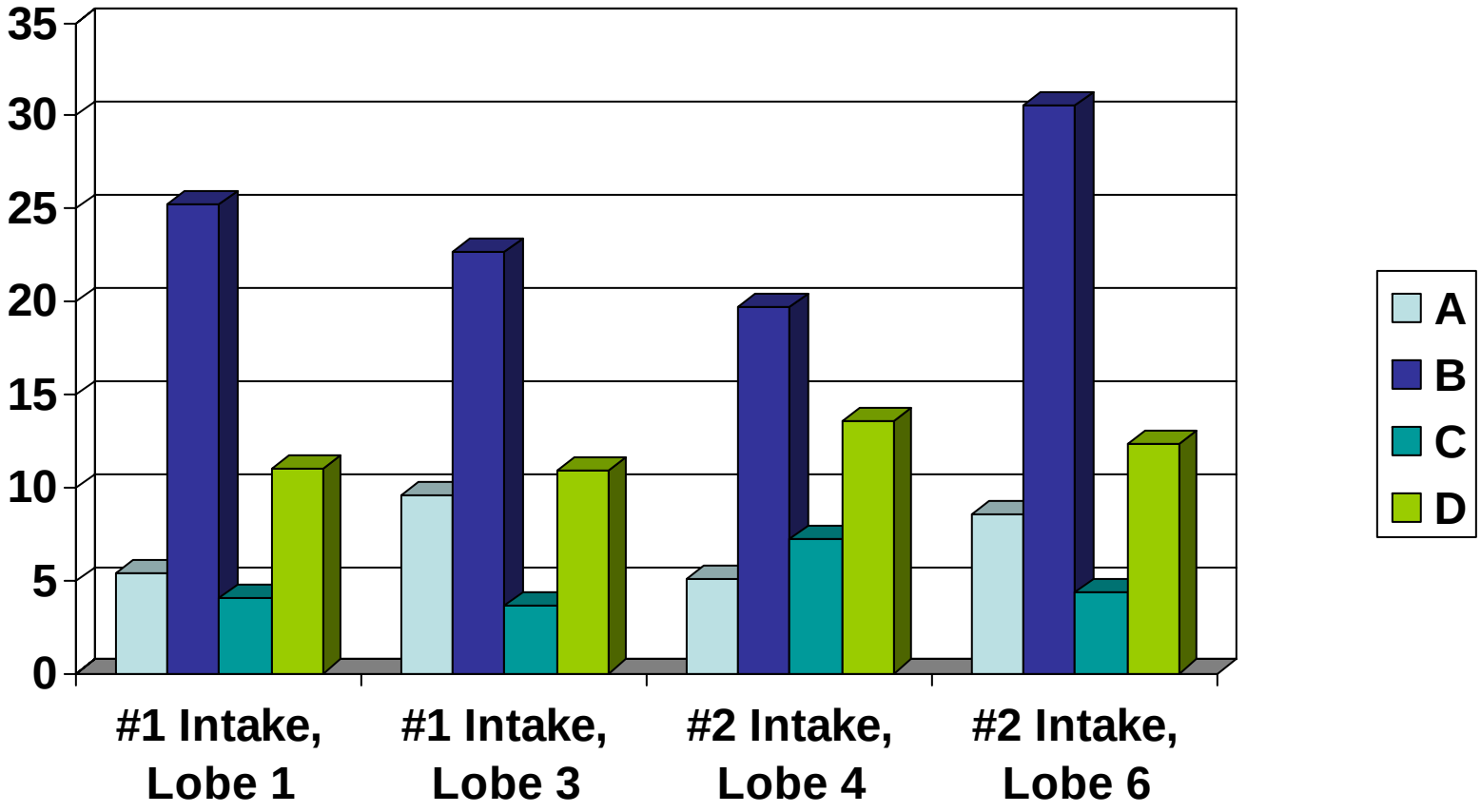
Wear By Lab and Position
4 Degrees After



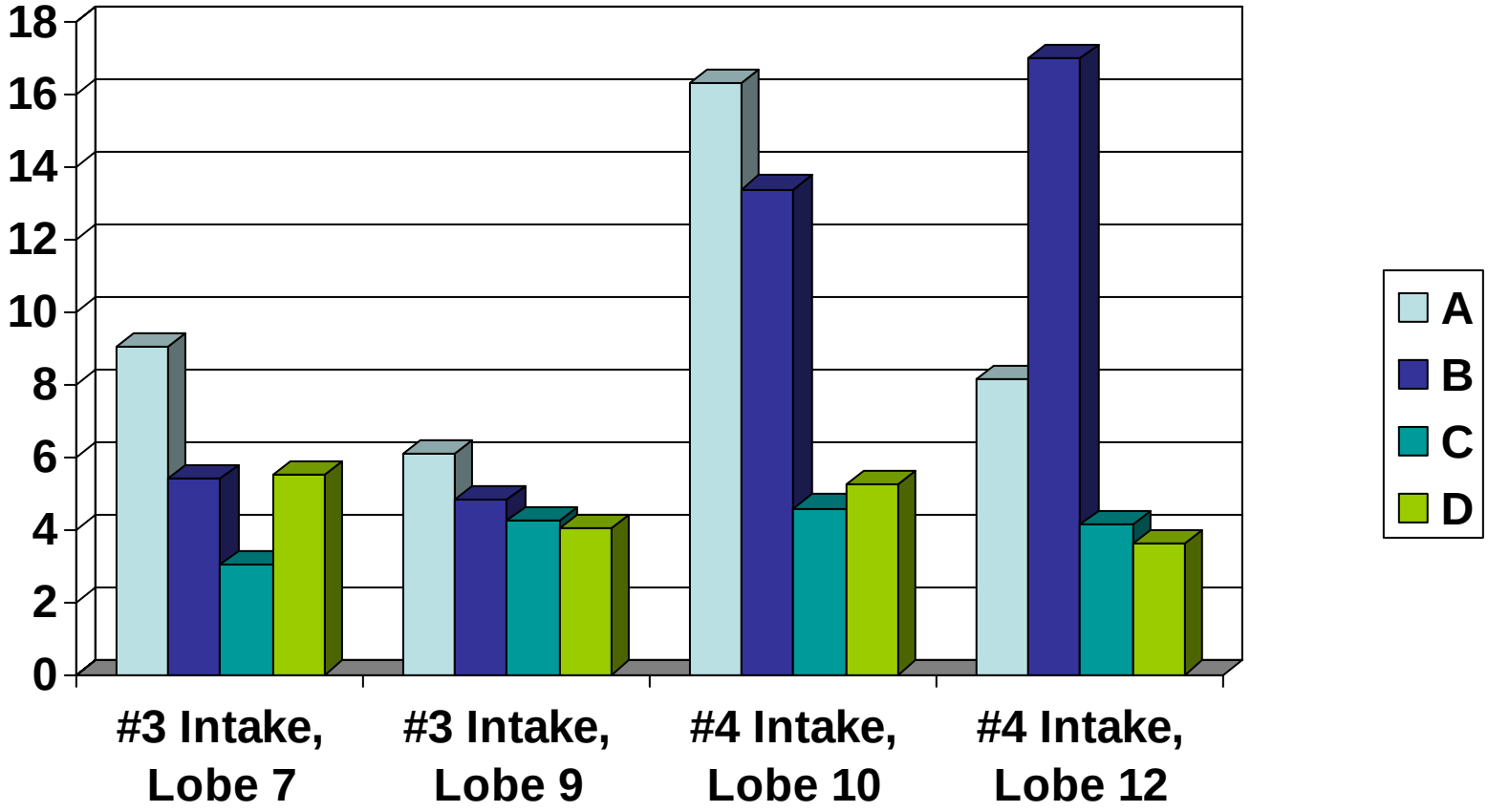
Wear By Lab and Position
10 Degrees After



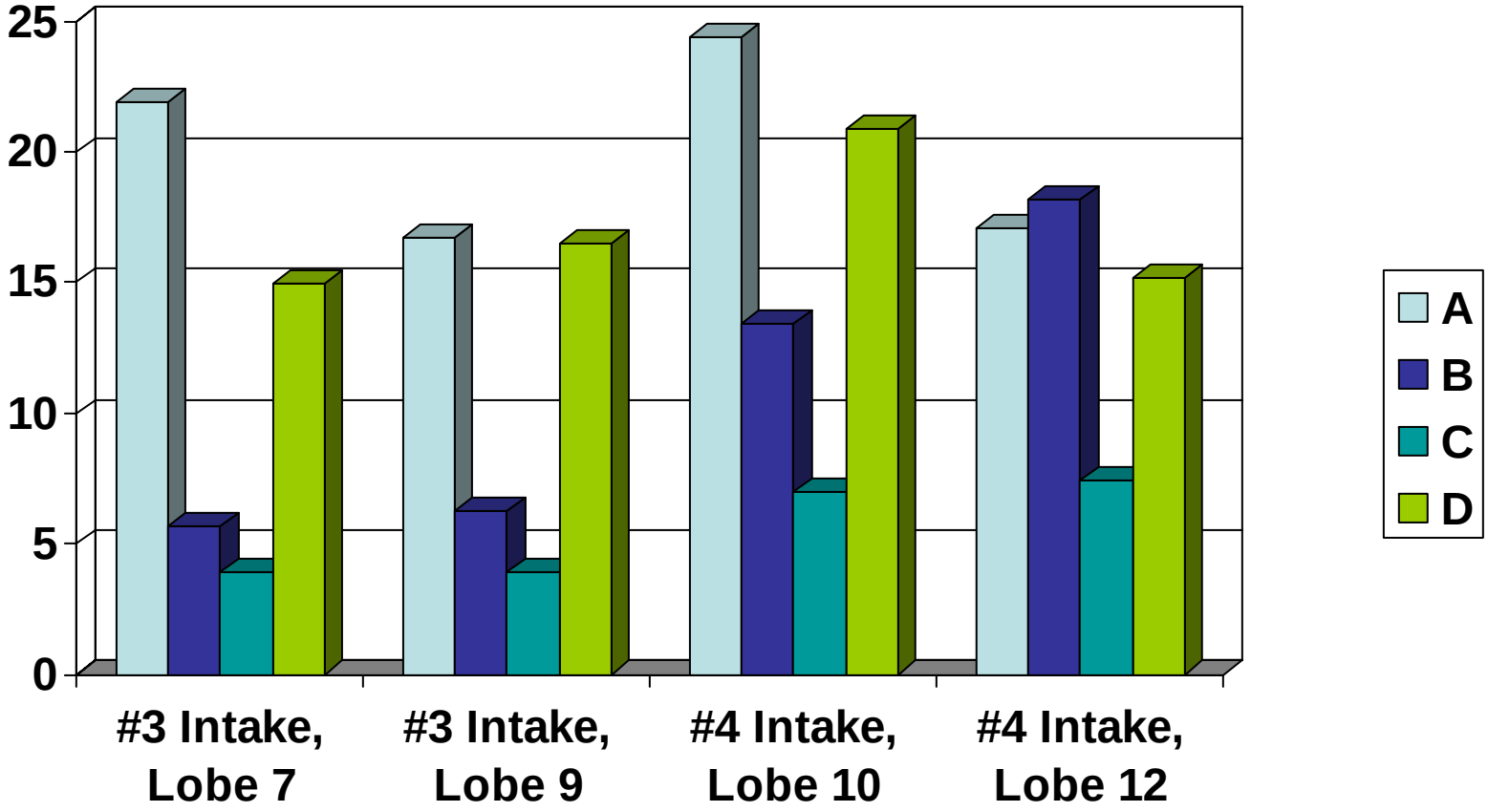
Wear By Lab and Position
14 Degrees After



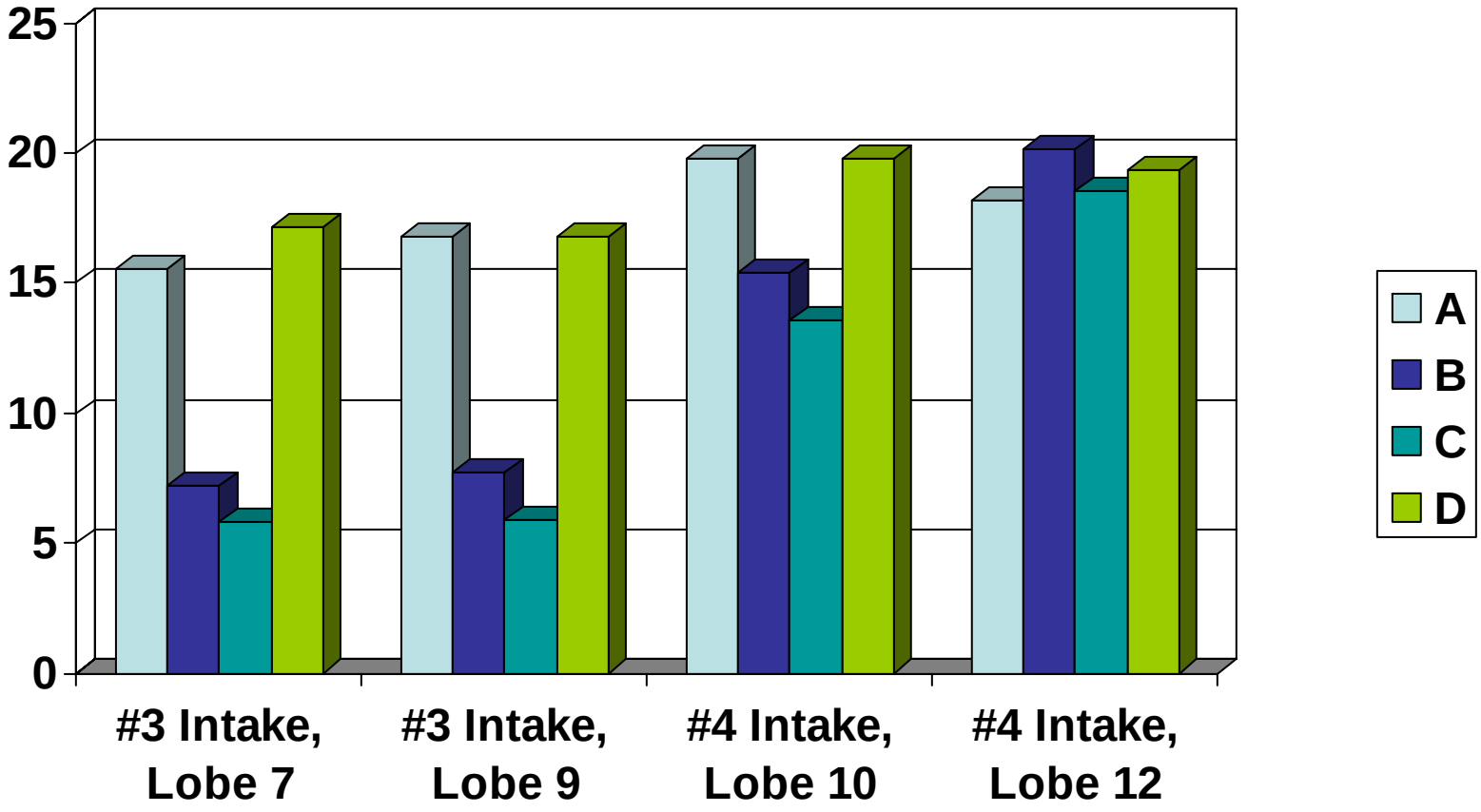
Wear By Lab and Position
14 Degrees Before



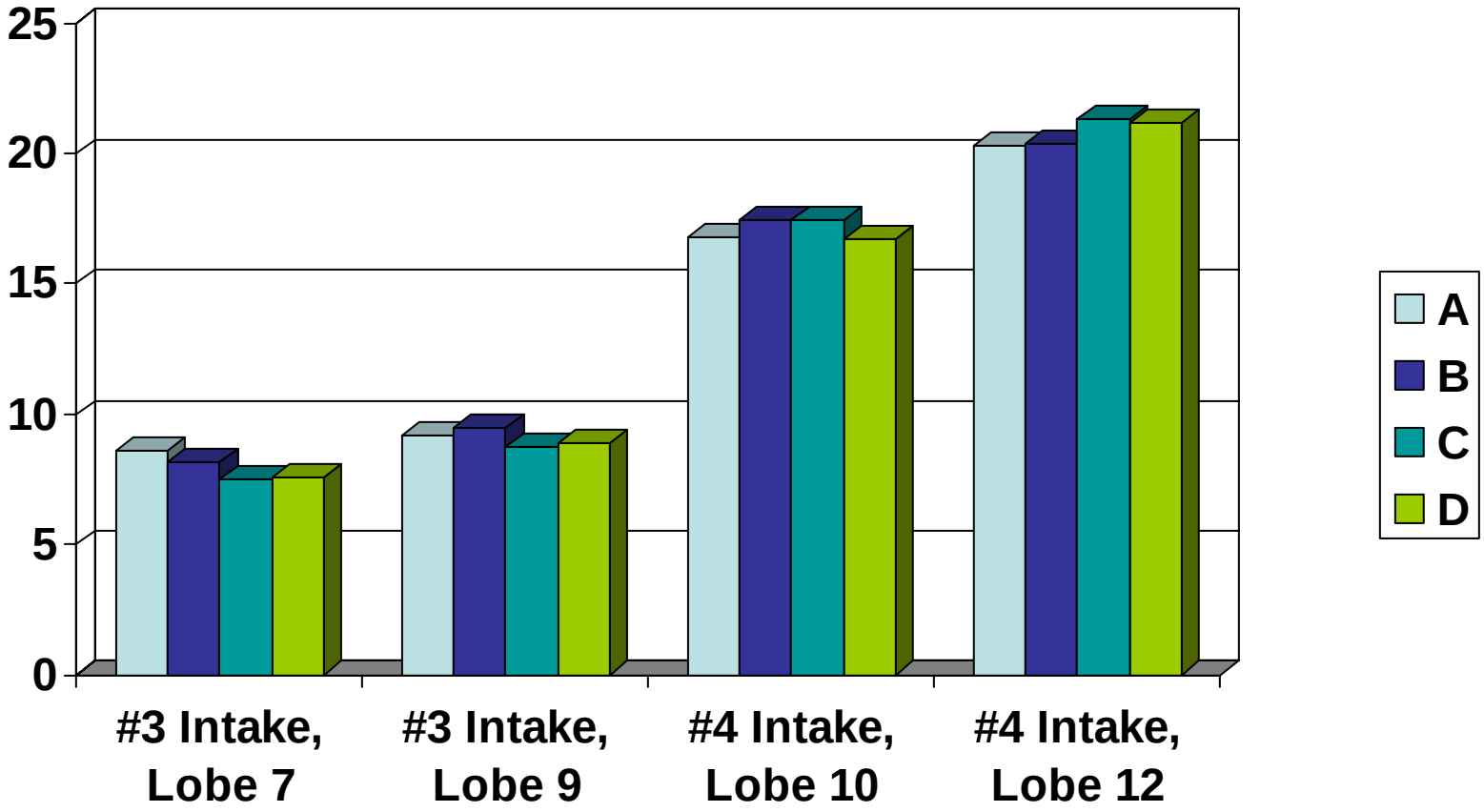
Wear By Lab and Position
10 Degrees Before



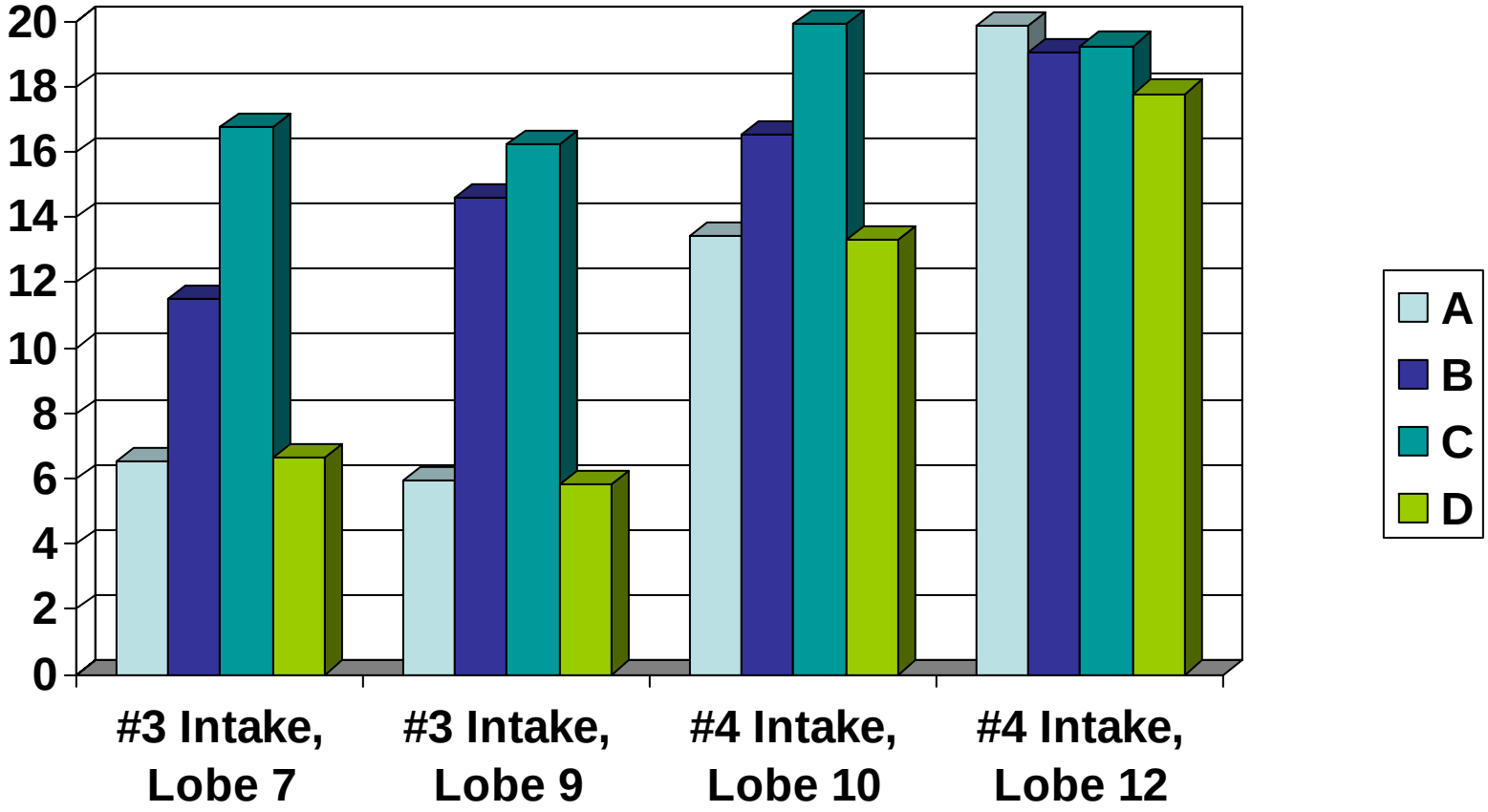
Wear By Lab and Position
4 Degrees Before



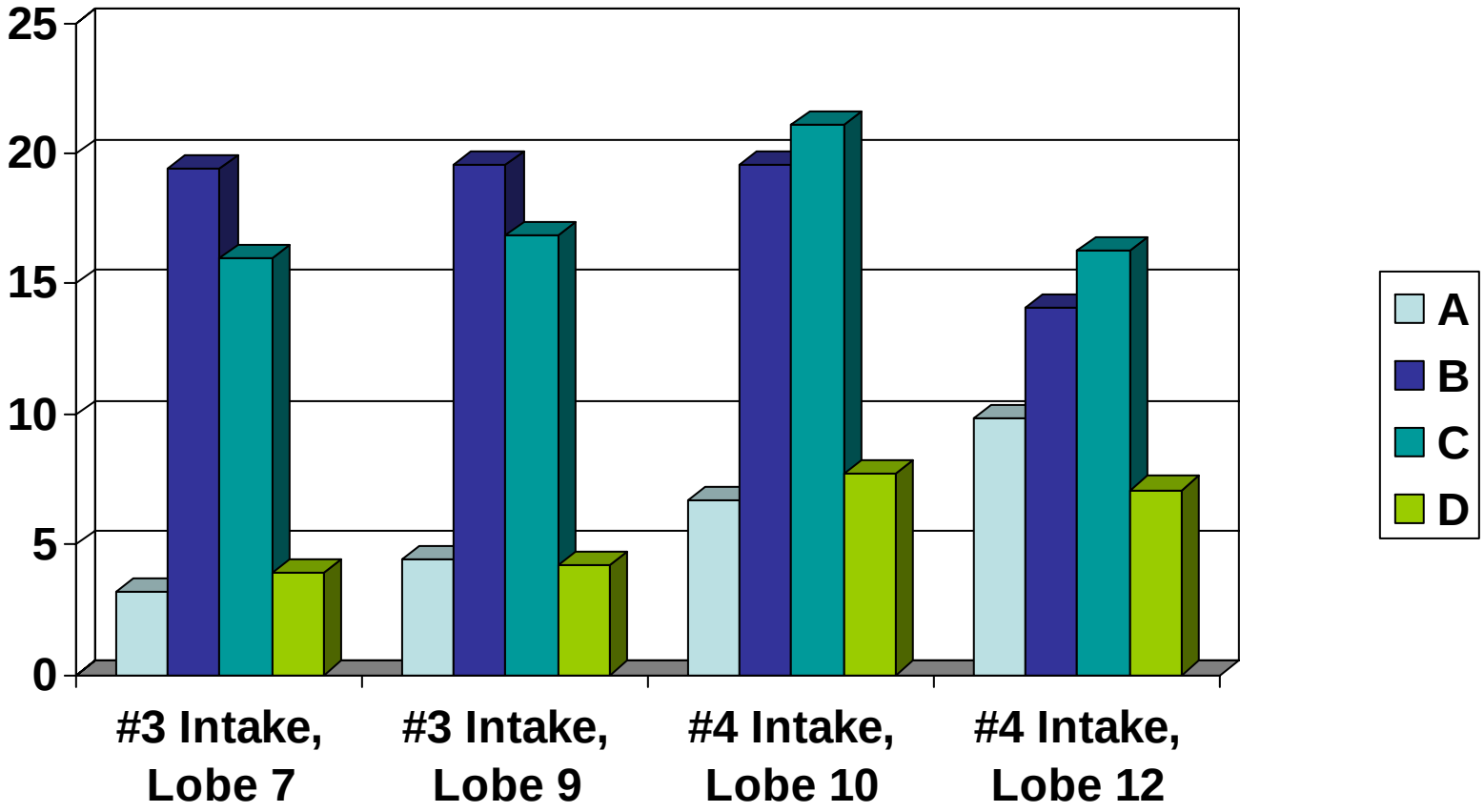
Wear By Lab and Position
Nose



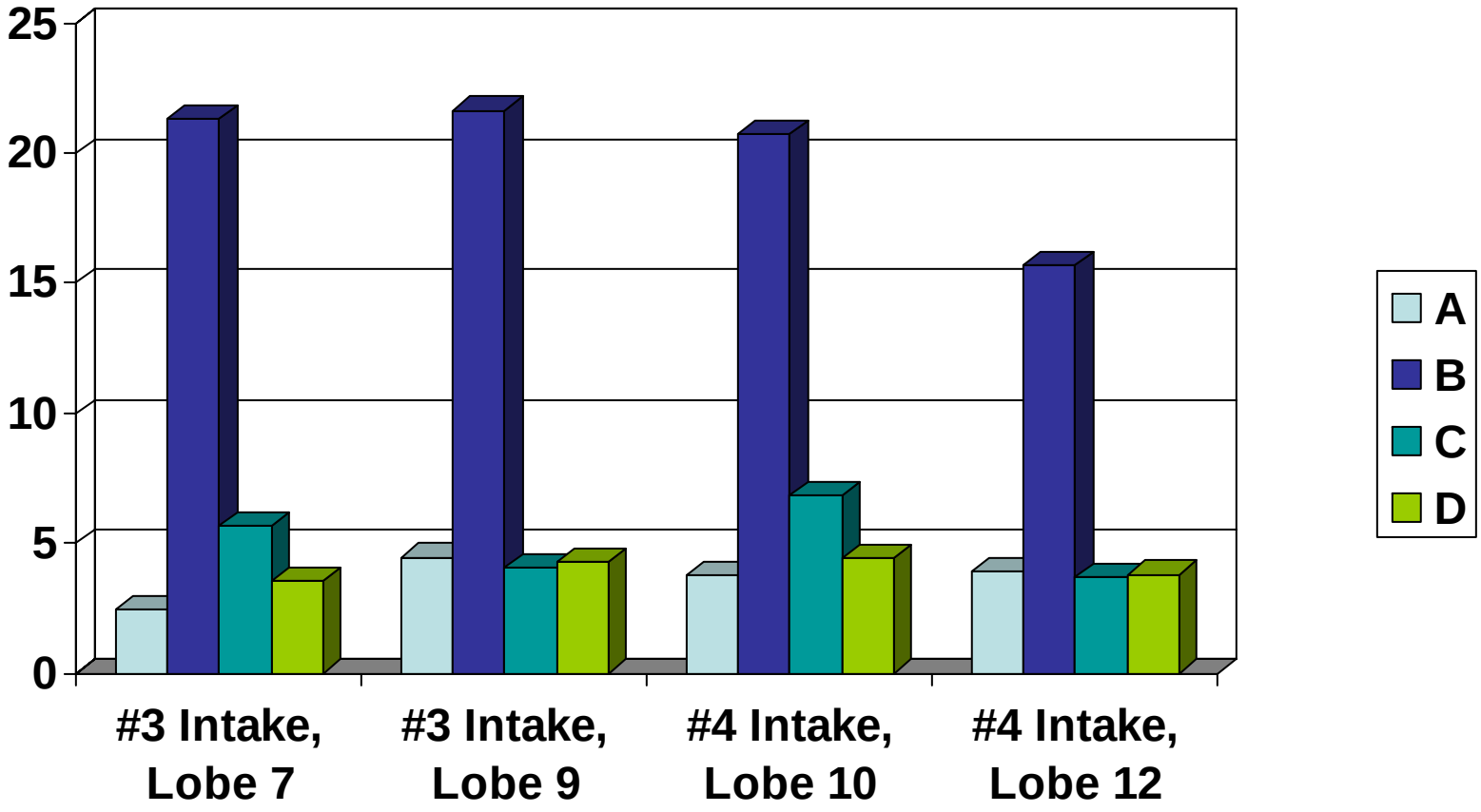
Wear By Lab and Position
4° After TDC



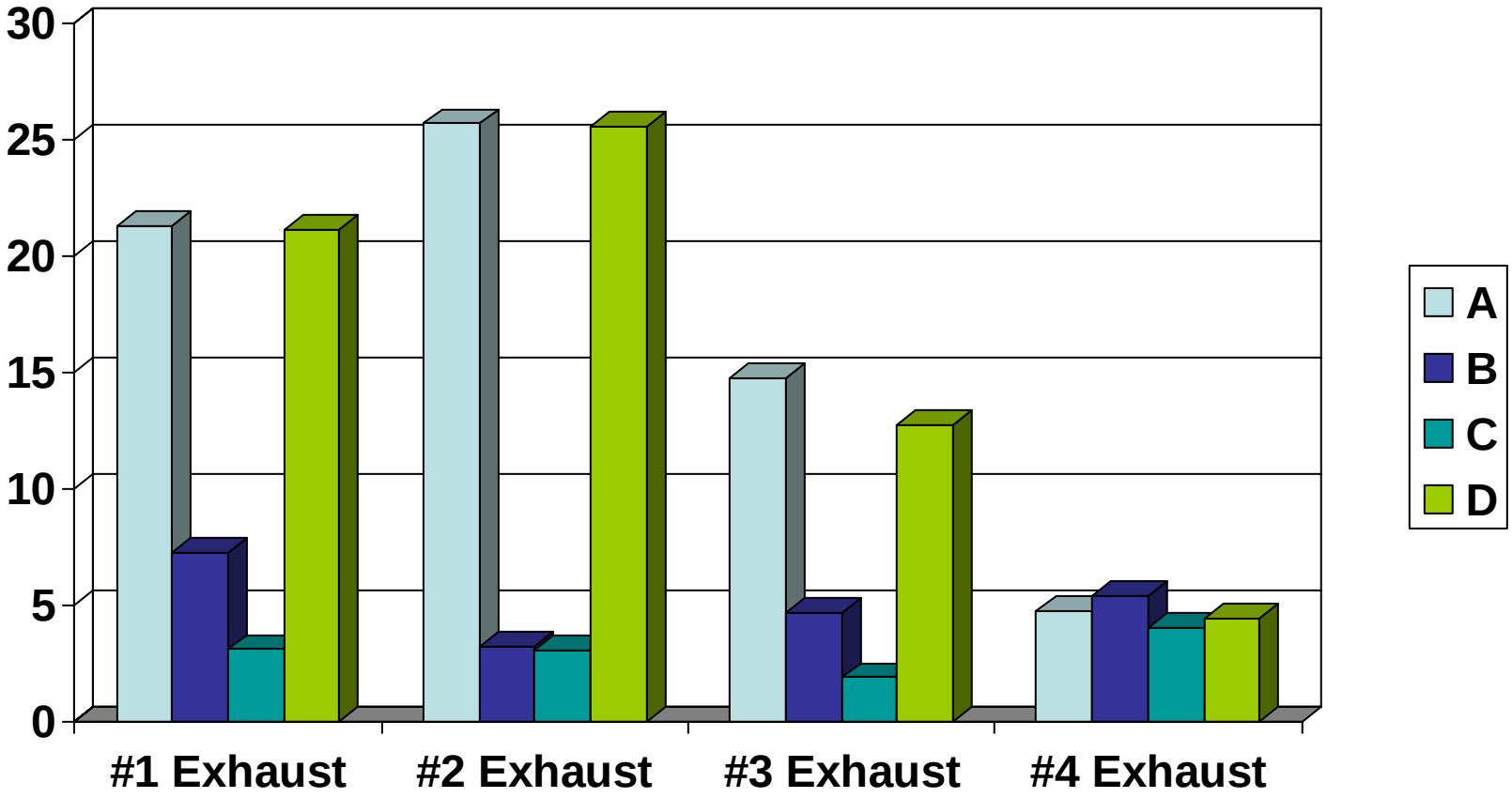
Wear By Lab and Position
10° After TDC



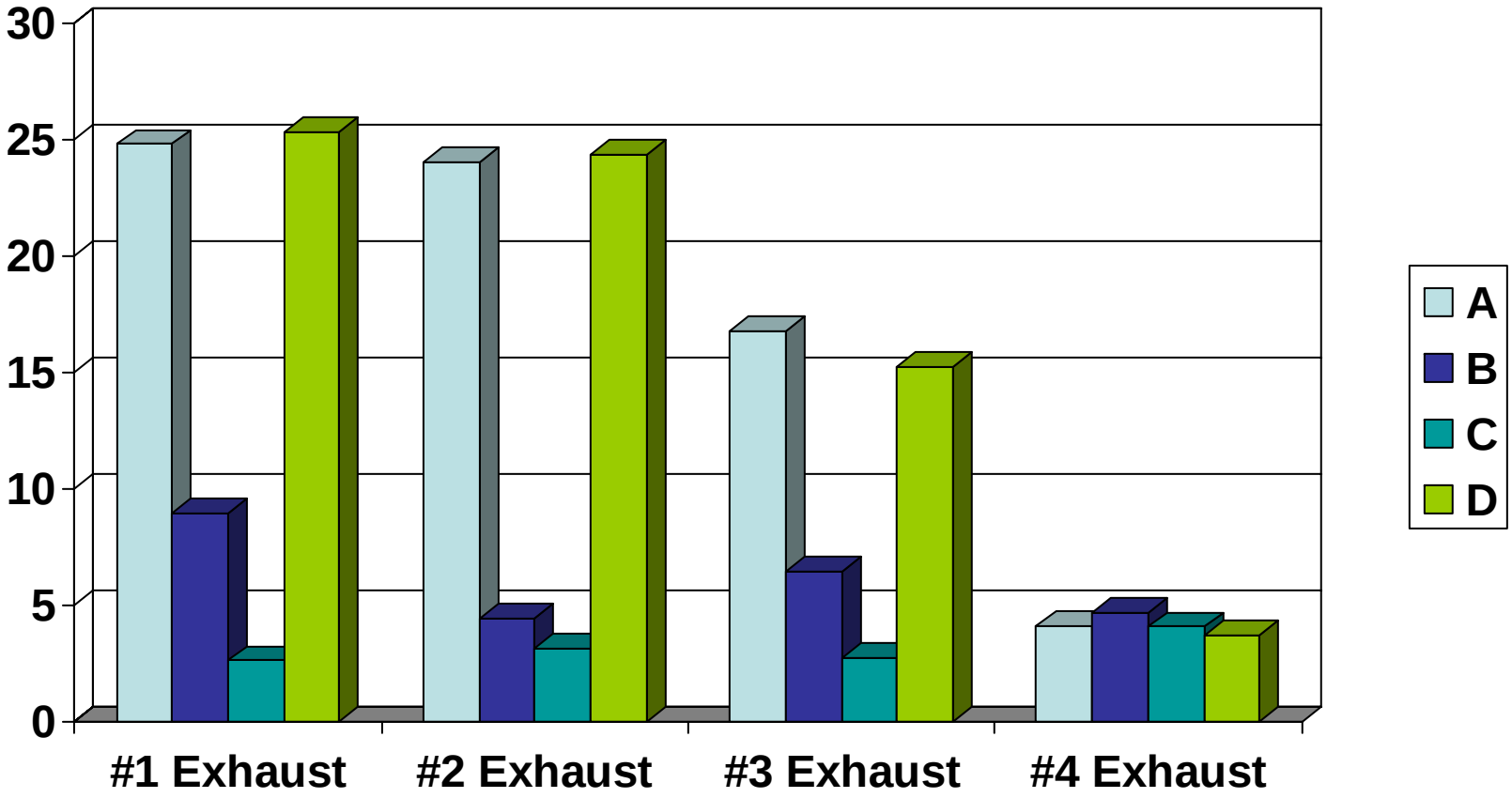
Wear By Lab and Position
14° After TDC



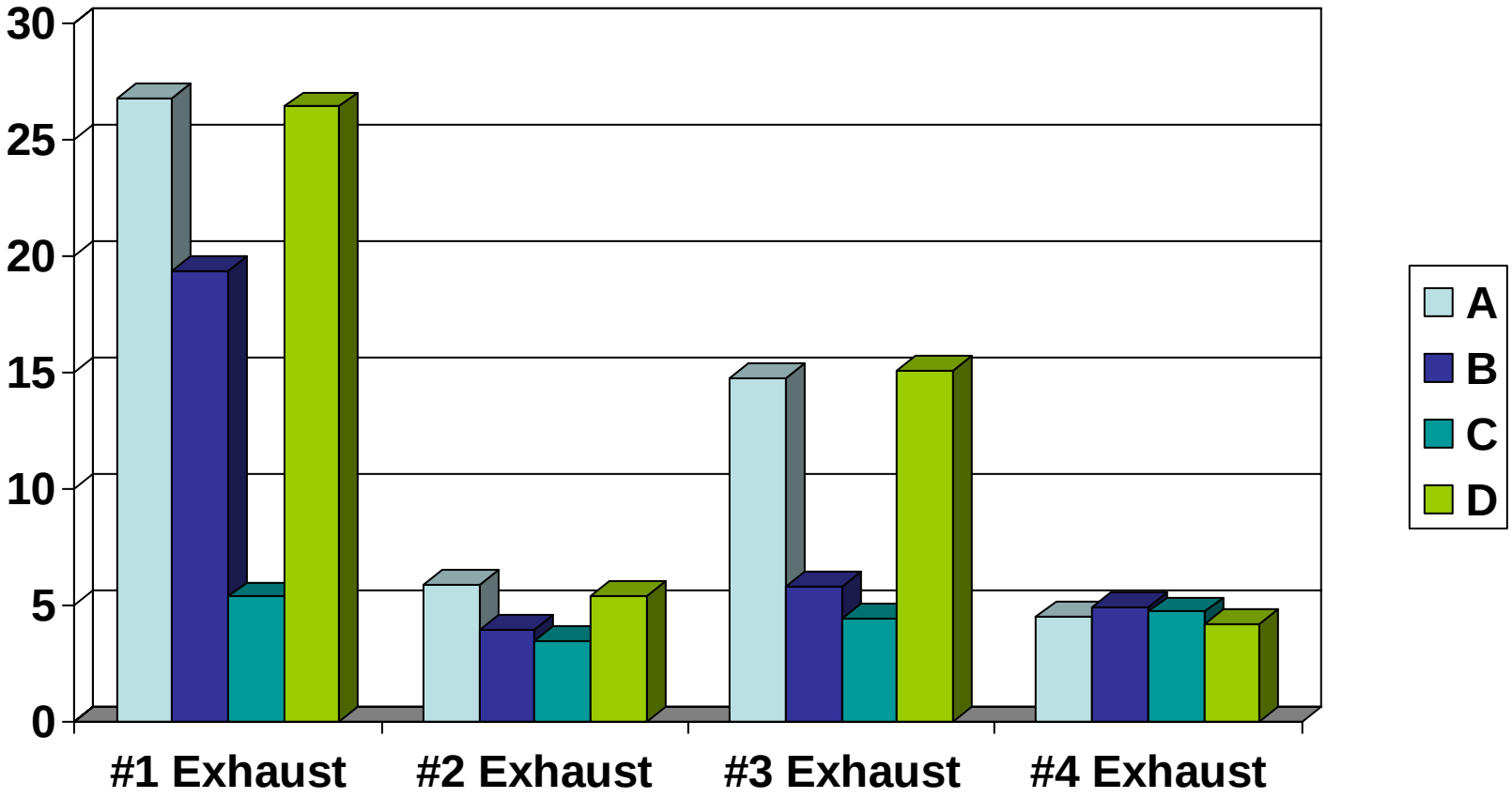
Wear By Lab and Position
14° Before



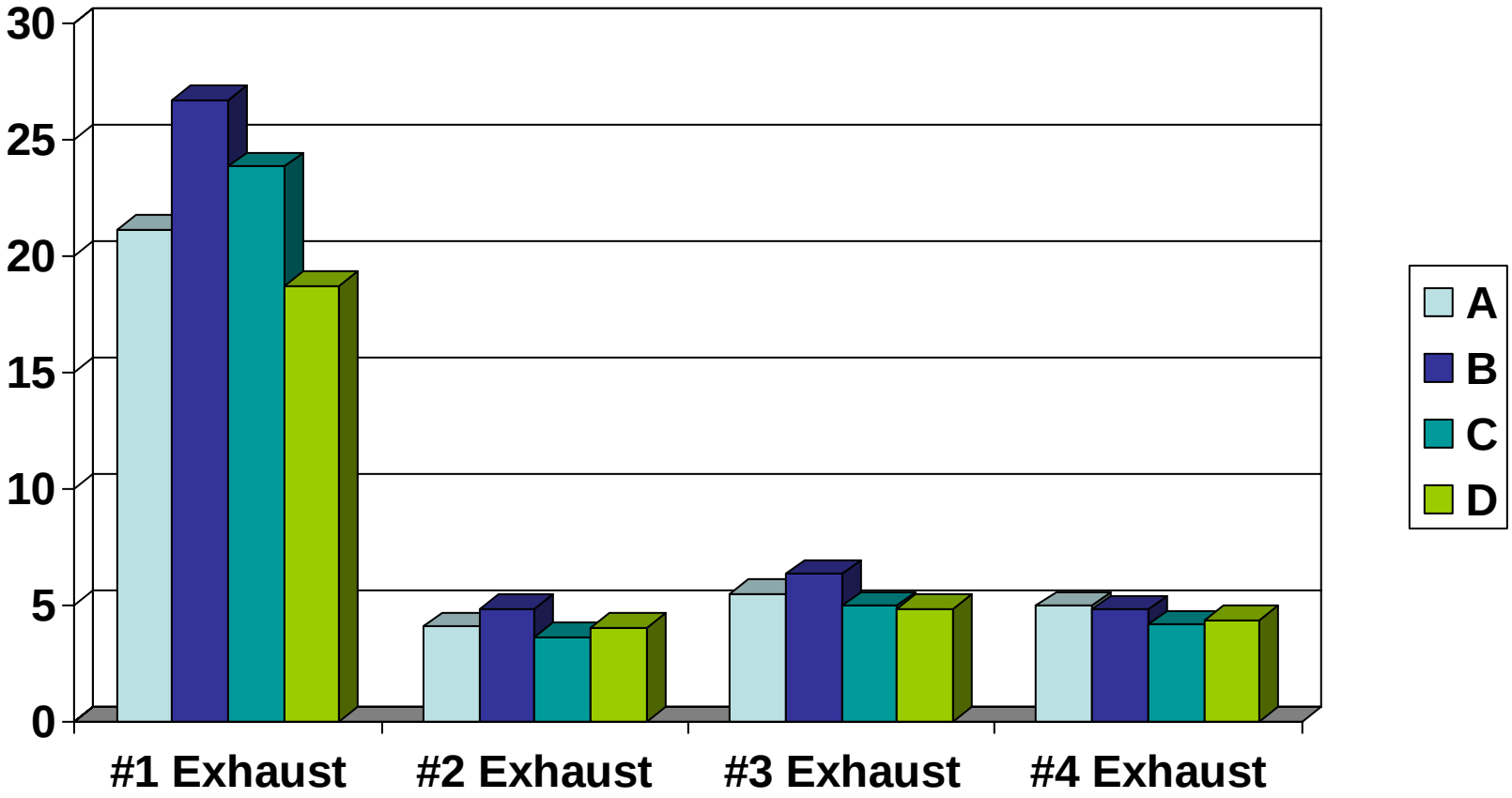
Wear By Lab and Position
10 Degrees Before



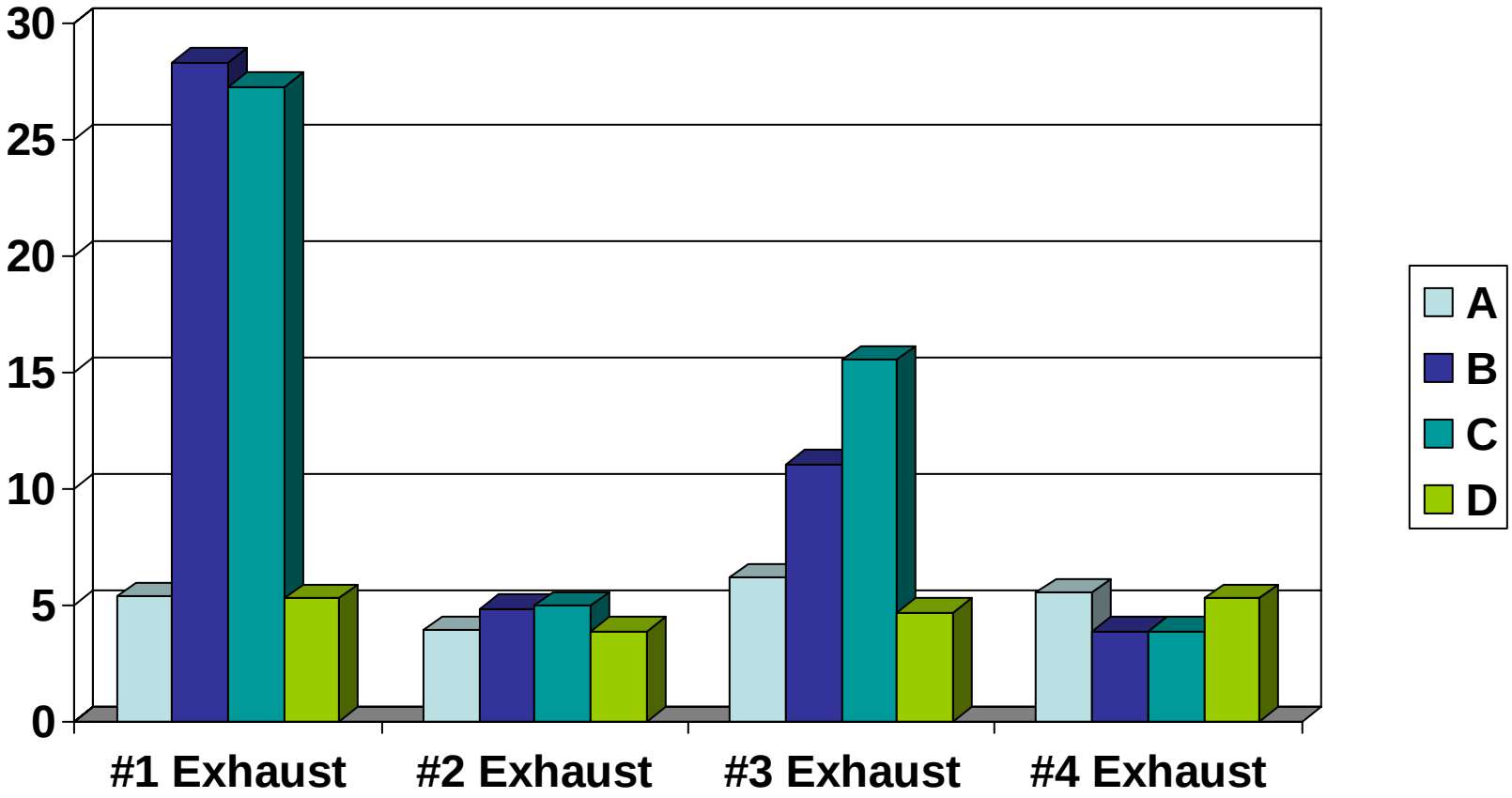
Wear By Lab and Position
4 Degrees Before



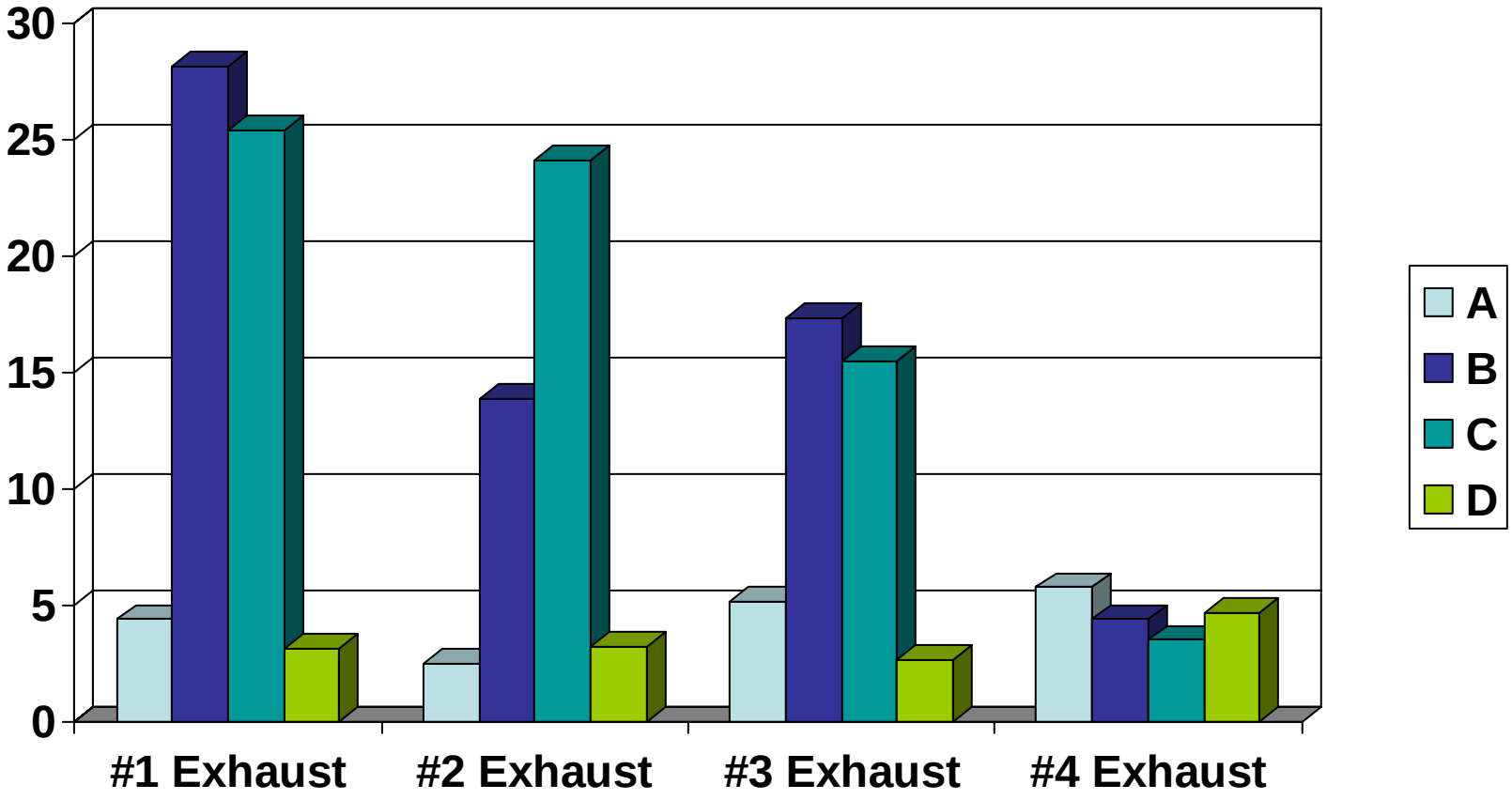
Wear By Lab and Position
Nose



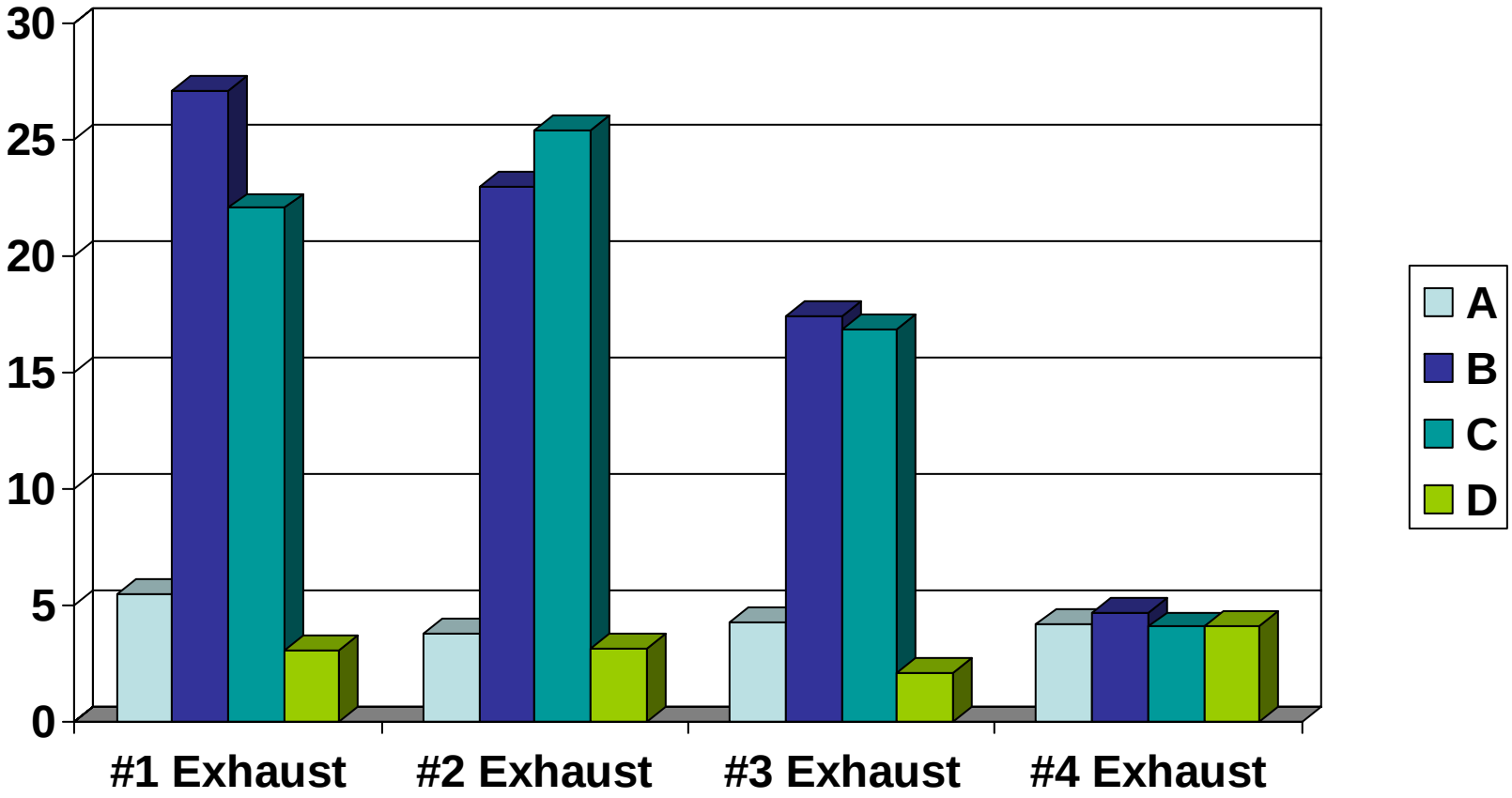
Wear By Lab and Position
4° After TDC



Wear By Lab and Position
10° After TDC



Wear By Lab and Position
14° After TDC



Attachment 7

ASTM Sequence IVA Surveillance Panel

Scope and Objectives

Scope

The Sequence IVA Surveillance Panel is responsible for the surveillance and continued improvement of the Sequence IVA test documented in Test Method D 6891 as updated by the Information Letter system. Data on test precision and laboratory versus field correlation will be solicited and evaluated at least every six months. Improvements in wear measurement technique, test operation, test monitoring and test validation will be accomplished through continual communication with the Test Sponsor and Parts Distributor, ASTM Test Monitoring Center, ASTM Committee D02.B0.01 and the ASTM Passenger Car Engine Oil Classification Panel. Actions to improve the process will be recommended when deemed appropriate based on input from the proceeding. The Panel will review development and correlation of updated test procedures with previous test procedures. This process will provide a suitable test procedure for evaluating an automotive lubricant's effect on controlling cam lobe wear for overhead valvetrain equipped engines with sliding cam followers.

Objectives	**Target Date**
1. Conduct 2006 metrology workshop	*Jan. 2006*
2. Conduct 2006 round robin	*May 2006*
3. Finalize long-term hardware availability plan	*On-going*

William A. Buscher III, Chairman
Sequence IVA Surveillance Panel

Updated: Nov. 2005