UNIVERSITY OF JOHANNESBURG

PROGRAM	:	BACCALAREUS TECHNOLGIAE *ENGINEERING : CIVIL*
SUBJECT	:	**CONTRACT MANAGEMENT**
CODE	:	**CMC411**
DATE	:	WINTER EXAMINATION 2015 30 MAY 2015
DURATION	:	(SESSION 1) 08:30 - 11:30
WEIGHT	:	40 : 60 (Year mark : Examination)
TOTAL MARKS	:	120

ASSESSOR	:	T.E.lOUW
MODERATOR	:	I . FERGUSON
NUMBER OF PAGES	:	6 PAGES

INSTRUCTIONS	:	All answers : All additional answer sheets are provided at the back of the examination question paper : Write name and Std. No. on additional material. : ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE USED.
REQUIREMENTS	:	Closed book examination.

2/...

INSTRUCTIONS TO STUDENTS

PLEASE ANSWER ALL QUESTIONS .
Place additional answers papers at the back of the Examination Book.

University of Johannesburg

Department of Civil Engineering Technology

Subject: Contract Management IV - CMC 411 (Examination June - 2015)

UNIVERSITY OF JOHANNESBURG

Note: 1) Some of the answers need to be provided in this document

2) This documents needs to be handed in. Mark on this paper the items you used (To help you)

3) Duration of this examination is 3 hours, and total marks is 120

NAME:		STD. NUMBER	
DATE:		SIGNATURE:	

QUESTION 1 Owning and Operating (O&O) (25)

You are required to determine the O&O cost per hour of an Earthworks Machine. It needs to be done over the lifetime of the machine, by applying the information provided below.

A plant Hire Company needs to buy a Dozer.

1. This machine will be used on various contracts.
2. These operations will be at work 6 days per week and 10 hours per day. (No weekend work)
3. These operations continue throughout the year with no time breaks (Do not bring PPH in the calculation)
4. The machine will be utilized as follows:
   i) Working time as per the working schedule of the operator.
5. General information on the Dozer is listed below in table format.
6. The repayment period of the Dozer will be 5 (five) years.
7. The applicable interest rate will be 12 (twelve) % pa. (See tables provided.)
8. Insurance will be 6.5 % of the Purchase price, per year.
9. The anticipated economical lifetime of the machine is estimated at 14000 (Hours)
10. The residual value of the machine after 5 (five) years will be 25% (Residual value)
11. The fuel price is R 16.65 per liter
12. The operator: (Applies only to the operator and not the machine)
    i) Rate per hour (NT) R 40.00 per hour. Rate per hour (OT) R 50.00 per hour
    ii) Max. normal hours per week 45 (Basic Conditions of Employment Act)
    iii) Maximum allowable overtime (OT) per week is 10 hours per week. (Basic Conditions of Employment Act)
    iv) The operator agreed to a 50 minute lunch with no pay for lunch.
    v) The lunch break will not count as "working hours".
    vi) The 10.0 hours at work <u>minus</u> the 50 minutes lunch break per day, will be "working time" for Operator and the same for the machine
13. Ignore any VAT aspect in this calculation.

Note: All prices in this Table represent: R x 1000

Make	Price	Additional Unscheduled Maintenance		Major Components Replace Engine			Major Components Replace Turbo charger			
		Over Lifespan		Duration Out of service	Frequency of occurrence	Engine Cost	Frequency of occurrence	Final Drive Cost	Duration Out of service	Over Lifetime
Cat Dozer	R2 800	10 Days Duration of work	20 % of price	4 Days	10000 hours	R 800	4000 hours	R 400	2 Days	7% of price of machine

Tracks			Preventative Maintenance				GET			Fuel Cons.
Price per set.	Frequency of occurrence	Duration Out of service	Price of service	Frequency of occurrence	Duration Out of service	Over Lifetime	Price each replacement	Frequency of occurrence	Duration - Out of service	l/h
R 120	4000 hours	2 days per event	R 9	500 hours	2 days per event	6 % of price of machine	R 8	2000 hours	1 Day per event	32

QUESTION 2: Contract Price Adjustment Factor (CPAF) (25)

You need to calculate the Contract Price Adjustment Factor for the Payment Certificate for this upcoming certificate: In this instance end January 2012

You have the following information available in the Table 2.1 below:

i) Accumulative figures of progress in months.

Table 2.1

Cumulative	LABOR	PLANT	MATERIAL	FUEL	SUB CONT.	PROFIT	TOTAL			
Date	Values are accumulative									
2011-05-31	300	900	400	400	200	200	2400			
2011-06-30	1100	1700	600	500	200	400	4500			
2011-07-31	1400	1800	1400	800	400	600	6400			
2011-08-31	1700	2300	2300	1000	500	800	8600			
2011-09-30	2300	2400	3300	1000	600	1000	10600			
2011-10-31	3500	2700	4100	1300	700	1200	13500			
2011-11-30	3900	3400	4800	1500	700	1400	15700			
2011-12-31	5200	3400	4900	1700	800	1600	17600			
2012-01-31	6400	3400	5700	1800	1000	1800	20100			
2012-02-29	7800	4200	6300	2000	1300	2000	23600			
TOTAL VALUES (Estimated)	45000	32000	40000	15000	10000	16000	158000			

Question 2 (Continue): Additional information available:

The Sub Contractor only supplies plant, with no labour.

The Base Index for this calculation is the month preceding (before) the first payment. (On the above table)

The portion of the contract not applicable to the price adjustment is 15%.

The values for the coefficient (a, b, c, and d) to represent the proportionate values of Labour, Plant, Material and Fuel must be used as follows a= 0.25, b= 0.4, c= 0.2, and d= 0.15

The payment is for the month of January 2012. (2012/01/31) Ignore the figures for February, these were estimates made for yearend financial reasons

A schedule of these indices is included for your convenience. (Courtesy of SAFCEC)

a) Your contract is in Ekurhuleni Gauteng
b) The contract involves Concrete Works
c) You have a "Wholesale" fuel supplier in the Witwatersrand Area.

The general conditions use in this agreement, between the company you work for and the client, is the "General Conditions of Contract for Construction works" (GCC) 2nd Edition (2010). Copies of the relevant pages are included for you convenience. (Courtesy of South African Institution of Civil Engineering)

You are required to provide the following:

i) Determine the factor to be applied by deciding on the indices and do the calculation.

Marks (20)

ii) Determine the total value to be claimed from the Client, with the information available, at the end of January 2012.

Marks (5)

QUESTION 3 CALCULATION: EARTHWORKS EQUIPMENT REQUIREMENTS (45)

A) General information

You are responsible for pricing a tender to build an embankment.
You are using the plant available in the "Plant Division" of the Company you work for.
You will hire all required equipment from the building of the embankment as per Table D and E below.
You will provide all Operators as per Table C below.
Do not allow for any profit or OHC (Overhead costs)
The "payback" period for the machines not applicable.
The anticipated contract period will be as per the requirements of the project (Building of the embankment)
Assume no holiday breaks, and no compensation for Public Holidays.
Price of Diesel is R 15-80 per litre.
The Haul distance is as per:

a) The Table in Section D below and
a) The "Haul distance" km is 9.5 km, from out of borrow pit to next to the embankment.
b) The dimensions of the embankment are as per the sketch (Section E below).

Use the Tables below and apply the following:

a) Only (1) one water Truck, (1) one Dozer (1) one Roller and (1) one Grader will be adequate to keep up with to loading operation and the watering / grading of the haul road as well as the watering / spreading / compacting of the embankment.
b) The Excavator for loading, is described:
   i) The capacity of the excavator is 185.0 m^3 per hour. (After all aspects have been taken into consideration i.e. efficiency, ground conditions etc.)

ii) Use only 1 (one) Excavator
iii) Because of the borrow pit layout the swing angle of the Excavator will be 180 Deg.
iv) The Digging Depth of the Excavator will be 50% of maximum.
v) Condition of soil is Medium to Easy Collapsed soil.
vi) Work efficiency is "Good".

c) The Tipper Trucks (haulers) for moving the material, are described:
i) The number of Tippers (Haulers) needs to be determined.
ii) The "Plant Hire Division" does have adequate numbers of Tipper Trucks (Haulers) available.
iii) Bin Capacity of the (Tipper Trucks) Hauler, 15.5 m^3
iv) Maximum speed of the hauler is 60 km / hour
v) Tipping time is 14 seconds
vi) Lowering time is 8 seconds

Material

The density of the material in the bank is (98 % Mod AASTHO) and take it as 100% and in this instance is 1920 kg/m^3
The "In Situ" density of the material is at 80 % Mod AASTHO.
The "Loose" density of the material is at 60 % Mod AASTHO.
Bulking factor to be used between the Loose on truck and the embankment is 1.2
The total length of the Embankment is as per the Table in Section E below.
Because of the borrow pit layout the swing angle of the Excavator will be 180 Deg.
The Digging Depth of the Excavator will be 50% of maximum.
Condition of soil is Medium to Easy Collapsed soil.
Work efficiency is "Good".

Labour

Assume the information in the Table in Section C below **(Labor / Operators / Others)** for the requirements of the Personnel.
Do NOT provide for additional persons or for any form of absenteeism of leave. Work only on the required hours.
Working on site will be an 8 (eight) hours / day (Working Time) for 6 days per week.
The Overtime (OT) rate will be 150% that of Normal Time (NT)
The "Lunch Break" is 1 (one) hour is not included in the 8 (eight) hours and this break will not be paid for.
If working is more than 45 hours per week OT (Overtime) must be paid.

B) Equipment information

No.	Machine	Make	Model	Machine Price		Tires			
	(Operator Class)			Buy X 1000	Rent/ HOUR	Price Each	Freq in hour	No. off	Fuel Consumption
1	Dozer (A)	Komatsu	D 85 EX	R 3 200	R 880	xxx	xxx	None	35
1	Grader (B)	Caterpillar	140 H	R 2 400	R 300	R 18 000	2500	6	30
1	Excavator. (B)	Hitachi	ZX 330	R 2 000	R 350	xxx	xxx	None	24
1	Roller (A)	Bomag	Drum	R 1 200	R 260	R 22 000	5000	2	28
TBD	Tipper(A)	BELL	B 25 D	R 1 800	R 280	R 25 000	3000	6	17
1	Water (A) Truck	Ford	B 200	R 600	R 200	R 6 000	5000	10	22

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C) Labor / Operator information

	Description	Unit	Quant. (Number)	Cost (R per Hour)	Remarks
1	Construction - Foreman	Hour	1	32	All in Rate per hour
2	Construction - Supervisor	Hour	1	28	All in Rate per hour
3	Construction – Labor / Telly	Hour	3	18	All in Rate per hour
4	Technician	Hour	1	45	All in Rate per hour
5	Technician - Assistant	Hour	2	25	All in Rate per hour
6	Operator Class A	Hour	Calculate	35	All in Rate per hour
7	Operator Class B	Hour	2	45	All in Rate per hour

D) Table D

Haul road

Long Section

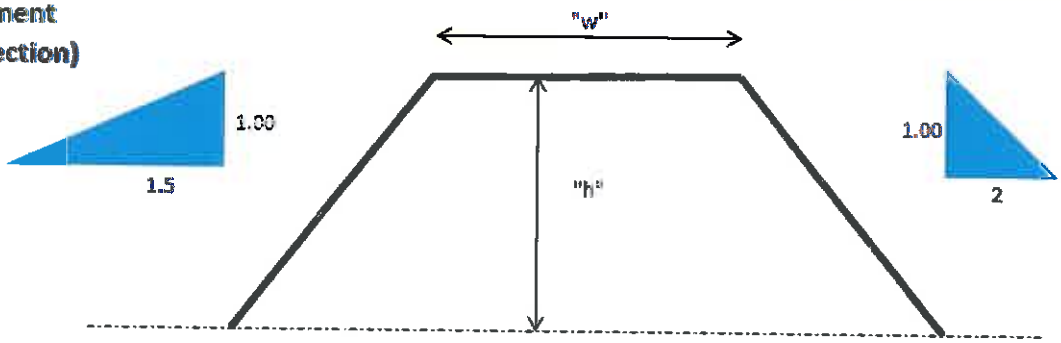
Section		In pit	Ramp	Haul	On Bank
Pit to Bank (km)	Distance	1	0.5	6	2
Pit to Bank (speed)	% of Max	65%	30%	90%	40%
Bank to Pit (Time)	% of Total	75 % of (Pit to Bank)			

E) Information on Embankment

Embankment 1 (Long Section)

Point		A	B	C	D	E	F	G	H	I	J
Distance between points "j"			15	15	15	15	15	15	15	15	15
Width	"w"	14	14	14	14	14	14	14	14	14	14
Height	"h"	0.0	4.0	5.5	6.0	7.3	9.5	7.8	4.8	3.2	0.0

Embankment 2 (Cross Section)



F) Information provided

i) All Information in Data Tables above, does not necessarily all apply to this test.

G) Required of the Students for this portion of this test (Detail aspects were discussed in class)

i) Determine the volume of the Embankment. (10)

ii) Determine the cycle time of the Tippers (15)

iii) Determine the duration of this operation. In working days or hours (5)

iv) Number of tippers (5)

v) Cost of the total operation all machines and operators (R per m^3) (10)

QUESTION 4 (25) General Aspects of Contact. (Please write on this page and hand it in)

Name: _____ **Student Number:** _____

Q Num.	Question	Mark	
4.1	Name 3 parties to a Civil Engineering Contract		
		1	
		1	
		1	
4.2	An Engineer usually has 2 roles in a Civil Engineering Contract, name these?		
	A)	1	
	B)	1	
4.4	Complex projects are usually carried out by two types of contractors name these?		
	A)	1	
	B)	1	
4.4	Usually there are 2 types of Subcontractors name an describe		
	A)	1	
		1	
	B)	1	
		1	
4.5	Name the 4. standard conditions of contract documents, which are most commonly used in SA		
	A) B)	2	
	C) D)	2	
4.6	What is the name of the document, if the General Conditions of Contract are adapted to address the specific requirements of the promoter		
		2	
4.7	The statement of work is a document, which describes the project in a narrative manner, and its development is a joint effort between the promoter and the project manager. Name 6 items/issues that will typically form part of it?		
	A) B)	2	
	C) D)	2	
	E) F)	2	
4.8	Project risks can be defined as a measure of the _____ and _____ of not achieving a defined project goal. Provide the two aspects left out above.		
	A) B)	2	
4.9	The Project Manager must however, tailor the project plan to suit the requirements of a specific project, name 6 Items to be part of a project plan.		
	A) B)	1	
	C) D)	1	
	E) F)	1	
	Note: Total marks for Question 3 will only be: (25)	(28)	

Question 1 (one)					Examination Date _____					
O / O Costs for a _____					Student Name					
Owning Cost					Student Num.					
1	Working Hours									
	1.1	Per month								
	1.2	Per year								
	1.3	per week								
2	Purchase									
3	Insurance									
			Total Owning cost							
			Total Owning cost per hour							
Operating Cost										
4	Fuel									
5	Planned Maintenance (Preventative)									
6	Tyre Replace									
7	Undercarriage									
8	Replace item									
9	Replace item									
8	Repair Cost (Unscheduled)									
9	GET									
10	Operator									
			Total Operating Cost	NT						
			Total Operating Cost	OT						
			Total Operating Cost per hour							
					Total Cost					
					Total Cost per hour					

CONTRACT PRICE ADJUSTMENT SCHEDULE

1. The value of each monthly certificate shall be increased or decreased by the amount obtained by multiplying "Ac", defined in Clause 2 of this Schedule, by the Contract Price Adjustment Factor, rounded off to the fourth decimal place, determined according to the formula:

$$(1-x)\left[\frac{aLt}{Lo}+\frac{bPt}{Po}+\frac{cMt}{Mo}+\frac{dFt}{Fo}-1\right]$$

in which the symbols have the following meaning:

"x" is the proportion of "Ac" which is not subject to adjustment. Unless otherwise stated in the Contract Data, this proportion shall be 0,10.

"a", "b", "c" and "d" are the coefficients contained in the Contract Data, which are deemed, irrespective of the actual constituents of the work, to represent the proportionate value of labour, contractors' equipment, material (other than "special materials" specified in the Contract Data) and fuel respectively. The arithmetical sum of "a", "b", "c" and "d" shall be unity.

"L" is the "Labour Index" and shall be the Consumer Price Index (CPI per province) for the province wherein the larger part of the Site is located, as stated in the Contract Data, and as published in the Statistical News Release, P0141, Table A of Statistics South Africa.

"P" is the "Plant Index" and shall be the Producer Price Index for Civil Engineering Plant as published in the Statistical News Release P0142.1, Table 12 of Statistics South Africa.

"M" is the "Materials Index" and shall be the Producer Price Index applicable to the industry as stated in the Contract Data and as published in the Statistical News Release P0142.1, Table 11 of Statistics South Africa.

"F" is the "Fuel Index" and shall be the Producer Price Index for Diesel at wholesale level for the area as stated in the Contract Data and as published in the Statistical News Release P0142.1, Table 12 of Statistics South Africa.

The suffix "o" denotes the base indices applicable to the base month as stated in the Contract Data.

Table BB

20 % Residual

Interrest / Period	-R 1 000 000	-R 1 200 000	-R 1 400 000	-R 1 600 000	-R 1 800 000	-R 2 000 000	-R 2 200 000	-R 2 400 000	-R 2 600 000	-R 2 800 000	-R 3 000 000	-R 3 200 000	-R 3 400 000	-R 3 600 000
8														
36	R 26 402	R 31 683	R 36 963	R 42 244	R 47 524	R 52 805	R 58 085	R 63 366	R 68 646	R 73 927	R 79 207	R 84 488	R 89 768	R 95 049
42	R 23 235	R 27 882	R 32 529	R 37 176	R 41 823	R 46 470	R 51 117	R 55 764	R 60 411	R 65 058	R 69 705	R 74 352	R 78 999	R 83 646
48	R 20 864	R 25 036	R 29 209	R 33 382	R 37 555	R 41 727	R 45 900	R 50 073	R 54 246	R 58 418	R 62 591	R 66 764	R 70 936	R 75 109
54	R 19 023	R 22 828	R 26 633	R 30 437	R 34 242	R 38 047	R 41 851	R 45 656	R 49 461	R 53 265	R 57 070	R 60 874	R 64 679	R 68 484
60	R 17 554	R 21 065	R 24 576	R 28 087	R 31 598	R 35 109	R 38 620	R 42 131	R 45 642	R 49 152	R 52 663	R 56 174	R 59 685	R 63 196

20 % Residual

Interrest / Period	-R 1 000 000	-R 1 200 000	-R 1 400 000	-R 1 600 000	-R 1 800 000	-R 2 000 000	-R 2 200 000	-R 2 400 000	-R 2 600 000	-R 2 800 000	-R 3 000 000	-R 3 200 000	-R 3 400 000	-R 3 600 000
12														
36	R 28 571	R 34 286	R 40 000	R 45 714	R 51 429	R 57 143	R 62 857	R 68 571	R 74 286	R 80 000	R 85 714	R 91 429	R 97 143	R 102 857
42	R 25 421	R 30 505	R 35 589	R 40 673	R 45 757	R 50 841	R 55 925	R 61 009	R 66 093	R 71 177	R 76 262	R 81 346	R 86 430	R 91 514
48	R 23 067	R 27 680	R 32 294	R 36 907	R 41 521	R 46 134	R 50 748	R 55 361	R 59 974	R 64 588	R 69 201	R 73 815	R 78 428	R 83 041
54	R 21 245	R 25 494	R 29 743	R 33 992	R 38 241	R 42 491	R 46 740	R 50 989	R 55 238	R 59 487	R 63 736	R 67 985	R 72 234	R 76 483
60	R 19 796	R 23 755	R 27 714	R 31 673	R 35 632	R 39 591	R 43 550	R 47 509	R 51 468	R 55 428	R 59 387	R 63 346	R 67 305	R 71 264

25 % Residual

Interrest / Period	-R 1 000 000	-R 1 200 000	-R 1 400 000	-R 1 600 000	-R 1 800 000	-R 2 000 000	-R 2 200 000	-R 2 400 000	-R 2 600 000	-R 2 800 000	-R 3 000 000	-R 3 200 000	-R 3 400 000	-R 3 600 000
12														
36	R 27 411	R 32 893	R 38 375	R 43 857	R 49 339	R 54 821	R 60 304	R 65 786	R 71 268	R 76 750	R 82 232	R 87 714	R 93 196	R 98 679
42	R 24 457	R 29 348	R 34 239	R 39 131	R 44 022	R 48 913	R 53 805	R 58 696	R 63 587	R 68 479	R 73 370	R 78 262	R 83 153	R 88 044
48	R 22 250	R 26 700	R 31 151	R 35 601	R 40 051	R 44 501	R 48 951	R 53 401	R 57 851	R 62 301	R 66 751	R 71 201	R 75 651	R 80 101
54	R 20 542	R 24 651	R 28 759	R 32 868	R 36 976	R 41 085	R 45 193	R 49 302	R 53 410	R 57 519	R 61 627	R 65 736	R 69 844	R 73 953
60	R 19 183	R 23 020	R 26 857	R 30 693	R 34 530	R 38 367	R 42 203	R 46 040	R 49 877	R 53 713	R 57 550	R 61 387	R 65 223	R 69 060

TABLE "A" - New Indices Dec 2012 = 100

tment Provisions (CPAP)

Refer to P0141 - Consumer Price Index: Additiona Indices: Table 3 and Table 4

Conversion Factors	0.7917656374	##########	##########	0.7751937984	(149	1.909	2.196	1.992	4.240	4.205

DEC 2012=100

		Western Cape	Eastern Cape		Northern Cape	Fiversion factors provided by STATSSA)				Fuel Wholesale	
						ble 4	Table 4	Table 4	Table 4	Table 4	Table 4
	Date	City of Cape Town	Port Elizabeth	East London	Kimberly	B el Fuel	Civil Engineering Plant		Roads & E/Works Plant	Mtwatersrand	Coast
1	2008	75.6	75.1	74.8	73.6	3.3	80.5			67.9	67.6
2	2008	76.0	75.5	75.1	73.9	7.5	84.5			68.5	68.3
3	2008	77.2	76.5	76.3	74.7	8.6	84.5			75.8	75.7
4	2008	77.8	77.0	77.0	75.6	02.4	84.5			87.9	87.9
5	2008	78.2	77.6	77.6	76.0	13.5	88.2			94.4	94.6
6	2008	79.0	78.5	79.0	77.1	25.3	88.2			101.1	101.4
7	2008	80.1	79.6	80.1	78.8	23.4	88.2			107.0	107.4
8	2008	80.6	80.0	80.7	79.6	01.2	91.9			105.4	105.8
9	2008	81.2	80.9	81.2	79.9	95.0	91.9			92.0	92.1
10	2008	81.5	81.1	81.3	80.3	91.0	91.9			86.7	86.7
11	2008	81.5	81.1	81.4	80.4	91.2	96.8			84.5	84.4
12	2008	81.4	80.7	81.3	80.2	96.1	96.8			76.9	76.7
1	2009	81.5	80.8	80.9	80.3	89.1	96.8			61.2	60.8
2	2009	82.2	81.8	82.0	81.0	65.4	101.1			60.7	60.4
3	2009	83.5	82.9	83.1	82.2	61.1	101.1			57.2	56.7
4	2009	83.8	83.3	83.5	82.5	60.3	101.1			60.9	60.5
5	2009	84.1	83.5	83.9	82.8	60.5	99.1			61.7	61.2
6	2009	84.5	83.6	84.2	83.1	61.9	99.1			60.4	60.2
7	2009	85.4	85.1	85.2	84.3	64.2	99.1			64.2	64.0
8	2009	85.7	85.4	85.3	84.7	63.2	100.0			62.3	62.1
9	2009	86.1	85.5	85.9	85.0	65.7	100.0			65.5	65.3
10	2009	86.2	85.5	85.8	85.0	62.1	100.0			62.5	62.3
11	2009	86.3	85.5	85.7	85.0	63.2	98.5			63.4	63.2
12	2009	86.9	85.7	86.0	85.0	66.4	98.5			65.8	65.6
1	2010	87.1	85.8	86.1	85.2	64.9	98.5			64.5	64.3
2	2010	87.4	86.5	86.7	85.4	66.6	98.5			65.4	65.2
3	2010	88.4	87.3	87.5	85.9	67.6	99.0			65.8	65.6
4	2010	88.7	87.4	87.8	86.3	71.5	99.0			70.4	70.3
5	2010	88.8	87.6	87.7	86.4	73.4	98.3			73.1	72.9
6	2010	88.7	87.8	87.8	86.1	72.4	98.2			71.7	71.6
7	2010	89.1	88.4	88.3	87.4	71.3	98.1			70.3	70.2
8	2010	89.1	88.4	88.3	87.4	70.6	97.8			69.0	68.9
9	2010	89.2	88.6	88.3	87.6	70.0	97.8			69.0	68.9
10	2010	89.3	88.7	88.5	87.8	70.2	97.9	97.4	95.1	68.8	68.7
11	2010	89.4	88.9	88.5	87.8	72.1	98.2	98.0	95.4	71.1	71.0
12	2010	89.6	89.0	88.7	87.8	74.6	97.3	97.0	95.0	71.1	71.0
1	2011	90.0	89.5	89.0	88.5	77.4	96.5	97.0	94.9	73.3	73.2
2	2011	90.7	90.2	89.7	89.1	84.6	97.7	98.1	95.6	76.2	76.1
3	2011	91.8	91.3	90.6	90.2	90.2	98.1	98.0	96.0	82.1	82.2
4	2011	92.1	91.5	90.9	90.5	95.6	98.2	98.0	96.3	88.7	88.3
5	2011	92.6	91.9	91.3	90.8	94.6	98.2	98.0	97.0	90.2	89.8
6	2011	92.9	92.1	91.9	91.0	91.8	98.9	98.8	97.4	86.6	86.2
7	2011	93.5	93.1	92.6	92.9	91.2	99.1	98.7	97.3	85.6	85.1
8	2011	93.7	93.2	92.8	93.3	91.0	99.2	97.9	97.5	87.0	86.5
9	2011	94.1	93.6	93.1	93.6	91.0	99.1	97.9	97.5	87.0	86.5
10	2011	94.5	94.1	93.7	94.3	94.6	98.3	97.1	97.3	90.3	89.9
11	2011	94.6	94.4	93.9	94.7	99.6	98.3	96.9	97.5	93.7	93.3
12	2011	94.8	94.6	94.1	94.9	101.2	98.7	97.3	97.9	96.6	97.8
1	2012	95.2	95.0	94.2	95.6	98.7	98.8	97.4	97.8	96.1	95.8
2	2012	95.6	95.4	95.0	96.1	98.6	99.2	97.9	98.0	96.1	95.7
3	2012	96.7	96.5	96.7	96.9	99.8	98.6	97.6	97 8	97.0	96.7
4	2012	97.1	96.9	97.2	97.1	101.8	98.8	98.1	99.7	101.8	101.2
5	2012	97.3	97.1	97.4	97.1	102.8	99.7	98.8	100 1	102.7	102.1
6	2012	97.5	97.5	97.6	97.1	98.9	99.9	98.8	100.4	100.4	100.1
7	2012	97.9	98.0	97.9	98.1	91.3	100.1	100.3	100.4	94.6	93.8
8	2012	98.0	98.2	98.0	98.3	93.5	100.3	99.8	100.7	95.9	95.1
9	2012	98.9	98.8	98.8	99.2	99.5	100.8	101.6	100.7	102.4	101.7
10	2012	99.4	99.4	99.4	99.7	104.4	100.8	102.6	101.1	102.9	105.5