FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

Development of an indoor air temperature predictive model for a naturally ventilated adobe mud hut; Botswana winter climatic conditions

by Kabo Letlhare-Wastikc (200405189)

Supervisor:

Assoc. Prof. Oboetswe Seraga Motsamai

Thesis submitted in fulfilment of the requirements for The Degree of Master of Science in Mechanical Engineering at The University of Botswana

August 2019

STATEMENT OF ORIGINALITY

The work contained in this thesis was completed by the author at the University of Botswana between January 20th, 2018 and May 30th, 2019. It is an original work except where due reference is made and neither has been nor will be submitted for the award of any other University.

Signed:

Date:

Kabo Letlhare-Wastikc (Student)

Signed:

Date:

Prof. O. S. Motsamai (Supervisor)

ACKNOWLEDGEMENT

My most sincere acknowledgements are to Kitso, my wife, who has unconditionally supported me to go ahead on pursuit of an academic career. She has sacrificed our family finances for this and many hours of home chores without complaining about my absence. Oboletswe, my son, has also forgone spending time with me as I dedicated time to this thesis – he deserves acknowledgement. I am most indebted to my wonderful supervisor, Professor O. S. Motsamai's guidance and wisdom in the development of this study. My God, whose name is Jesus, has given me the wisdom, the strength and the will power to carry out this study from beginning to ending, He is worthy of all honour and praise.

ABSTRACT

A transient heat transfer model to predict the indoor air temperature within a Botswana traditional hut (made of adobe/mud bricks) is developed from Fourier's law of heat transfer, taking into consideration conduction, convection and irradiance. The predictive model was developed and analysed using MATLAB and correlated against in-situ experiments taken on July 5th 2018. They are then validated with a new data set as collected on July 7th 2018. At 95% variance level the model demonstrates an excellent strength of association against actual indoor temperature at a correlation coefficient of 0.9, with an impressively low RMSE of 0.45°C and an R-squared value of 65%, which is a fairly acceptable goodness of fit. Given the global need for energy saving, environment symbiosis and energy optimization, it is important to develop and improve natural ventilation predictive models to guide decision makers. With other environmental design methodologies, the model developed in this study should influence national housing policy towards sustainable indigenous construction; inform the development of natural building standards and indoor air quality strategies of the hot and dry climatic countries globally.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS AND ABBREVIATIONS

Symbols:

Variable	**Description**	**Unit**
A	Surface area	[m-2]
A_{bs}	Area of the bottom surface	[m^2]
A_{curv}	Area of the curving side	[m^2]
A_{cyl}	Area of the cylinder	[m^2]
A_{door}	Area of the door	[m^2]
A_{glass}	Area of the glass	[m^2]
$A_{topsurface}$	Area of the top surface	[m^2]
$A_{windows}$	Area of the windows	[m^2]
C_a	Specific heat capacity of room air	[J.kgK]
C_c	Mass airflow coefficient	[J.kgK]
Clo	Clothing insulation	[Clo]
g	Acceleration due to earth's gravity	[Gag]
h	Heat transfer coefficient	[W.m^2K-1]
H	Height	[m]
h_{ca}	Convective heat transfer coefficient	[W.m^2K-1]
h_i	Heat transfer coefficient inside	[W.m^2K-1]

h_o	Heat transfer coefficient outside	[W.m$^2K-1$]
h_{ra}	Radiative heat transfer coefficient	[W.m$^2K-1$]
$I_{alt.}$	Alternating solar intensity	[W.m^2]
I_{av}	Mean solar irradiance over 24 hours	[W.m^2]
I_d	Diffuse solar irradiace on horizontal surface	[W.m^2]
I_g	Global solar irradiace on horizontal surface	[W.m^2]
I_{peak}	Peak solar irradiance	[W.m^2]
I_T	Solar irradiace available on horizontal surface	[W.m^2]
K	Thermal conductivity	[W/mK]
K_{wall}	Thermal conductivity of the wall	[W/mK]
L	Wall thickness	[m]
l_{sl}	Slanted height of the cone	[m]
M	Metabolic rate	[kcal/day]
M_a	Mass of room air	[Kg]
$_a$	Mass flow rate of air	[kgs$^-$1]
n	Ventilation coefficient	[m$^2s^-$1]
N	Number of air changes per hour	[h-1]
Q	Heat input (gain/loss)	[W]
Q_{alt}	Total alternating heat gains	[W]
$Q_{alt(cond.)glass}$	Alt. conductive heat input (gain/loss) through the glass	[W]
$Q_{alt.glass}$	Alternating heat input (gain/loss) through the glass	[W]
$Q_{alt.opague}$	Heat input (gain/loss) through the opaque	[W]
Q_{door}	Heat input (gain/loss) through the door	[W]

Q_{gain}	Heat input	[W]
Q_{ground}	Heat input (gain/loss) through the ground	[W]
$Q_{internal}$	Internal heat input (gain/loss)	[W]
$Q_{isothermal}$	Isothermal heat input (gain/loss) from internal furniture	[W]
Q_{loss}	Heat loss	[W]
$Q_{periodic}$	Heat input (gain/loss) over time	[W]
Q_{roof}	Heat input (gain/loss) through the roof	[W]
$Q_{v(alt)}$	Alternating heat input (gain/loss) through ventilation	[W]
$Q_{ventilation}$	Heat loss by ventilation	[W]
Q_{wall}	Heat input (gain/loss) through the wall	[W]
Q_{window}	Heat input (gain/loss) through the window	[W]
r	Radius	[m]
RH	Relative humidity	[%]
S_a	Alternating solar gain factor	[ ]
T	Temperature	[°C]
T_1	Inside temperature	[°C]
T_a	Ambient temperature	[°C]
$T_{a,out}$	Ambient temperature outside	[°C]
T_{avg}	Average temperature	[°C]
T_{comf}	Comfortable temperature	[°C]
T_{iew}	inside surface temperature of the eastern wall	[°C]
T_{indoor}	Indoor temperature	[°C]
T_{inw}	Inside surface temperature of the northern wall	[°C]

T_{iroof}	Inside surface temperature of the roof	[°C]
T_{isw}	Inside surface temperature of the southern wall	[°C]
T_{iww}	Inside surface temperature of western wall	[°C]
T_{max}	Maximum temperature	[°C]
T_{max-in}	Maximum inside temperature	[°C]
$T_{max-out}$	Maximum outside temperature	[°C]
$T_{min-out}$	Minimum outside temperature	[°C]
$T_{o(swing)}$	Diurnal temperature swing of the peak mean temp.	[°C]
T_r	Inside room temperature	[°C]
$T_{s(av)}$	Daily mean air sol temperature	[°C]
$T_{sol,roof}$	Sol temperature of the roof	[°C]
$T_{sol,wall}$	Sol temperature of the wall	[°C]
T_{swing}	Temperature swing	[°C]
T_{sX}	Outdoor sol air temperature	[°C]
T_T	Temperature	[°C]
U	U-value (thermal transmittance)	[W/m^2K]
V	Air velocity	[ms$^-$1]
V_a	Room air volume	[m^3]
$V_{conicalroof}$	Volume of conical roof of the hut	[m^3]
X_{wall}	thickness of the wall	[m]
Y	Room admittance	[W.m^2K]
δP	Pressure difference	[Pa]
T	Temperature difference	[°C]

δT	Temperature change	[°C]

Greek symbols

Variable	**Description**	**Unit**
α	Absorptivity of surface	[ ]
β	angle of surface inclination	[°]
π	Pie	[ ]
ρ	Density of air	[Kg.m^3]
ϵ	Emissivity of surface	[ ]

Subscripts

a	Air

Abbreviations

ACH	Air Changes per Hour
ACS	Adaptive Comfort Model
ARCC	African Regional Climate Centre
ARSO	African Organization for Standardization
BCE	Before Common Era
BS	Botswana Standard
BWP	Botswana Pula
CEB	Compressed Earth Bricks
CFD	Computational Fluid Dynamics
CIBSE	Chartered Institute of Building Services Engineers
DBT	Dry Bulb Temperature
DC	Discomfort Coefficient

EAHE	Earth-Air Heat Exchanger
EPBT	Energy Pay Back Time
HVAC	Heating Ventilation and Air Conditioning
IPCC	International Panel on Climate Change
LCC	Low life Cycle Cost
SADCSTAN	Southern African Dev. Community Cooperation in Standardization

CHAPTER 1

INTRODUCTION

The latest developments in energy research are attempting to solve the global energy crisis by offering novel green energy solutions. Before the exclusive and combined use of mechanical heating, ventilation and air conditioning (HVAC), bio-climatic means were used to achieve moderately comfortable indoor climates [1].

Bio-climatic techniques are found mostly in indigenous buildings because traditional construction materials have been proven overtime to be environmentally conscious [2, 3, 4]. Many architectural publications advocate that traditional and vernacular homes form the basis of environmentally conscious design [5], as they are ecologically sustainable and climate adaptable [1]. The traditional buildings use the environment, climate responsive design, local and sustainable materials [1], and therefore can be the green energy solution to HVAC in buildings as they utilize minimal energy [6]. The adobe mud hut that is indigenous to many cultures, including Botswana, utilizes bio-climatic techniques of HVAC.

This study will develop, validate and document a heat transfer mathematical model to predict the indoor air temperature of a typical Botswana adobe mud hut. The climatic conditions of southern Botswana will be used because traditional construction techniques vary greatly across the country.

1.1 Background

1.1.1 Earthen construction characteristics

Traditional construction takes many forms, among them earthen construction. Earthen construction is an umbrella classification of various manifestations. There is rammed earth, adobe bricks, compressed earth blocks (CEB), wattle and daub, earth bags and stabilised earth. The advantages of thermal comfort, heat and sound insulation, minimal negative impact on the environment, eco-friendliness, energy and cost efficiency and easy repair and maintenance makes earthen construction the most desirable construction technique [7 - 14].

This technique however, does not come without its own disadvantages. Authors [15,16] list among the disadvantages of earth construction the following;

- Lack of skilled workmanship
- Absence of earth construction related courses
- Less durable than conventional materials
- Less adaptable in seismic areas
- Structural limitations
- Association of earth construction with low income status

1.1.2 Durability

Little and Morton [17] argue that the durability of earthen structures depend on maintenance strategies, while other authors [18, 19] attribute erosion of earth walls to rain intensities

above 25 mm/m. The greatest attestation of earthen durability is best borne by the Great Wall of China, which according to Pacheco-Torgal and Jalali [20], has more than 3,000 years but has extensive sections built on rammed earth. The literature provided by Makinde [21] reports 75 to 200 years of durability for adobe brick buildings and 200 to 600 years of durability for rammed earth buildings.

The durability and compressive strength of earth can be improved by reinforcement and stabilisation with synthetic or natural materials [22 - 26] among them molasses, cow dung and saw dust [27]. In the contrary however, Binici et al., [28] argue that using straw fibres in adobe bricks reduces compressive strength. This gives researchers a need to investigate optimum stabilisation materials that do not jeopardise compressive strength.

1.1.3 Energy saving, efficiency and CO_2 emissions

The economics of earth construction depends on several aspects such as construction techniques, labour costs, stabilization process, durability, embodied energy of construction and maintenance for habitability. Mishra [29] has presented very impressive results on the heating energy saving, cooling energy saving and the optimum insulation thickness of the mud wall. The optimum thickness (0.067 m) is where energy saving is maximum and total annual cost (of fuel and insulation) is minimum [29].

Fay et al. [30] emphasize the need to consider embodied and operating energy in the design strategies of buildings in order to reduce energy consumption. Embodied energy is the direct and indirect energy used in the whole construction process of a building [31]. Moreover, embodied energy includes the energy expenses incurred to maintain and operate it habitably [32] during its lifetime. This can also be referred to as Low Life Cycle Cost (LCC).

Embodied energy studies by Reddy and Kumar [35] have revealed that embodied energy in stabilised rammed earth walls increases linearly with the increase in cement content. This increase in embodied energy is undesirable in the science of sustainable architecture. Lourenco [36] states that the embodied energy of earth buildings is half that of conventional cement based buildings. Chel and Tiwari [37] reports embodied energy of a single mud (adobe) brick as 0.0016 MJ/kg, while Easton [38] reported it at 0.7 kW.hr as shown in Table 1.1. Both of the reported figures are significantly lower than the conventional building materials. In an adobe house, a total embodied energy of 475 GJ/m^2 (compared to 720 GJ/100m^2 for a conventional house) has been reported by Shukla et al [39], as well as energy pay-back time (EPBT) of 1.54 years and a CO_2 mitigation of 101 tonnes/year. In contrast, Chel Tiwari [37] reported a pay-back time of 18 years. The significant disparity of EPBT reported by the two studies is not immediately clear, but can be assumed to be due to different building subjects, in terms of size and location.

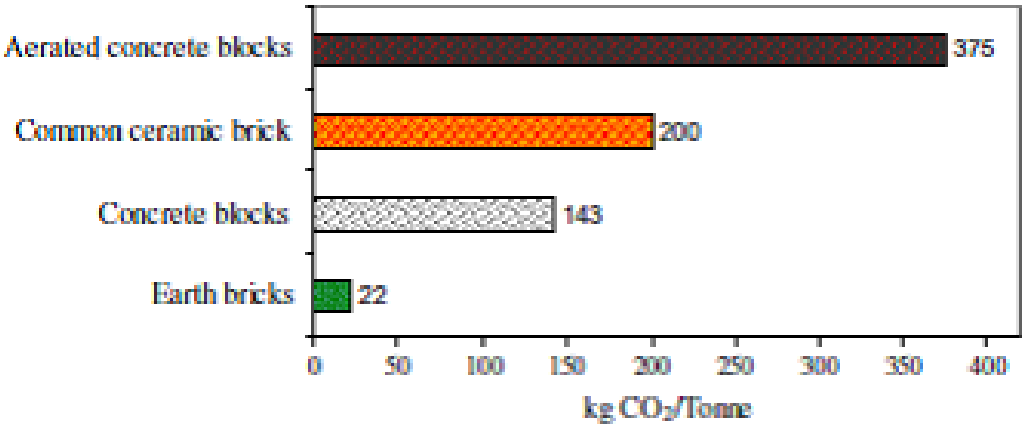


Figure 1.1: Embodied CO2 per kg in different masonry materials [6]

Thomark [33] suggests that the right decision about construction and materials can mean 17% energy reduction. The correct choice of building materials can reduce almost 30%

Table 1.1: Embodied energy of building materials, adapted from [38].

Material	Building block	Unit [kW.hr]
Portland cement	42.6 kg sack	111.8
Lime, hydrated	45.4 kg sack	129.1
Common brick	1 block	3.98
Concrete brick	1 block	8.5
Earth (adobe) block (mechanized production)	1 block	0.7

carbon dioxide (CO_2) emissions, translating to about 38 tonnes of CO_2 [34]. Morton et al. [6] presents in Figure 1.1 a comparative kg CO_2/ton emissions for common materials, in which earth bricks emerge as the most suitable for construction as their manufacturing process has the least emissions. Madhumathi et al.[1], in a study in Tamilnadu, India, records a heating and cooling potential of 1500 kWh/year for the warm and humid climates. The total mitigation of CO_2 emissions for this cooling load was determined to be 6 metric tonnes/year [1], which is very significant.

Botswana is not exempt from the mentioned threats of environmental and ecological effects. In 1991, about 60% of houses in Botswana were earthen [40]. However, ten years later an alarming decline in earthen structures was reported. The statistics presented by Lyamuya and Alam [40] show that in 2001, earth based walls had dropped to only 24% while sand cement walls shot to 70% of the total housing construction. This major shift in construction techniques must have contributed immensely to the significant increase from 1,904,490 (in 1981) to 4,999,292 tonnes (in 2003) of carbon based emissions in Botswana alone [41]. There is therefore a need to research, document and lobby decision makers on alternative energy efficient and eco-friendly buildings.

Table 1.2 shows comparative ecological benefits of different earthen based construction strategies, in which adobe construction performs very well against its counterparts, second

Table 1.2: Comparison of ecological benefits of earth based construction techniques, adapted from [38].

	Rammed earth	Adobe	0.051 x 0.1524m Frame	Straw bale
Wall thickness [m]	0.46 to 0.91	0.1524	0.1524	0.56 to 0.71
Maintenance	Low	Low	High	Moderate
Fire resistance	Very high	Fair	Fair	Fair
Pest/bug resistance	Very high	Moderate	Very low	Low
Energy efficiency	Very high	High	Fair	Moderate
Thermal mass	Very high	Moderate	Very low	Low
Building style	Versatile-thick look	South-West	Very versatile	Versatile-thick look
State building type	Standard	Standard	Standard	Alternative
Cost	110%	108%	100%	72%
Durability	200-600 years	75-200 years	75-125 years	Unknown
Acoustic ability	Very high	High	Very low	Moderate
Ability to stop high velocity projectile	Very	high	Very low	Moderate
Temp. variance floor to ceiling [°C]	-17 to -16	-17 to -16	-13 to -11	-13 to -11

only to rammed earth. This research is therefore focused on adobe constructions as rammed earth is not indigenous to Botswana.

1.2 Problem Statement

Five to ten tonnes of cement is used annually to build the average middle class house, and for every ton of cement manufactured, a ton of CO_2 is released [62] into the atmosphere. In the European Union (EU), 40% of total energy demand is related to housing construction [69,79]. The International Panel on Climate Change (IPCC) [73] predicts that CO_2 emissions due to construction activities may grow from the 2004 figure of 8.6 billion tonnes to 15.6

billion tonnes by 2030. The carbon footprint of conventional construction and the resulting negative global effects are indeed far reaching environmentally and ecologically.

Besides global pollution effects, Madhumathi et al. [1] has expressed that given the challenge of a growing fuel crisis, the amount of energy used to provide thermal comfort levels will become unsustainable in the future and will have a negative effect on household economies. Domestic and industrial electricity consumer tariffs continue to increase globally. Botswana has increased tariffs from an average of BWP 0.73425 kWh to an average of BWP 0.9187 kWh from 01st of April 2018 [116]. This tariff increase is in excess of 25% year on year. Given Botswana's hot and dry climate with long summers, indoor cooling is the major design criterion for buildings. The natural cooling strategies of the adobe brick hut can guide local modern designers to sustainable building designs. However, the lack of documented research of Botswana's indigenous hut will not help the designers. There is therefore a clear need to investigate the indigenous hut's natural cooling techniques, given that its construction has absolutely no CO_2 emissions.

1.3 Need for study

Besides the threat of the unsustainability of fossil fuels and their environmental impacts, the need to investigate energy implications of the adoption of traditional building technologies by modern architecture is necessitated by among others the fact that approximately 30% (which is over 2 billion) of the world's present population still lives in earthen structures [117], and adobe is recently considered a premium building material by movie stars and rich people for their homes [61].

Despite global demand for earthen dwellings by ecological and cultural conservationists, Botswana's demand is regressing. As at 1991, about 60% of houses in Botswana were earthen [40], however, a decline in earthen structures over a period of ten years was reported. The statistics presented by Lyamuya and Alam [40] show that in 2001, earth based walls had dropped to only 24% while sand - cement walls shot to 70% of the total housing construction. This major shift in construction techniques must have contributed immensely to the significant increase from 1,904,490 (in 1981) to 4,999,292 tonnes (in 2003) of carbon based emissions in Botswana alone [41].

In the case of Botswana, despite centuries of vernacular architecture in our society, there is still no building codes in the area. The foregoing calls for researchers to lobby policy makers with credible well researched and documented literature on the environmental advantages and energy cost saving implications of incorporating vernacular building ventilation strategies into modern architecture, hence this study.

1.4 Research Objectives

The main purpose of this study is to develop a mathematical model that predicts indoor air temperature based on outdoor ambient temperature in a naturally ventilated adobe brick mud hut in the climatic conditions of Botswana. This shall be achieved by;

- Obtaining the solution of a transient heat transfer function
- Development and calibration of an indoor temperature prediction model
- Validation of the model with a different test set

1.5 Research scope

As per several studies [27,118], thermal comfort is usually divided into two groups: environmental factors (air temperature, radiant temperature, air velocity and humidity) and personal factors (age, gender, health status, clothing insulation, activity level, and metabolic heat resulting from human physiology). In Fanger's experiments [119], the ASHRAE thermal sensation scale is used by subjects to give a score/grade of their feeling of comfortability. De Dear and Brager [110] claim that, "acceptability" is never precisely defined by the standard, it is commonly agreed within the thermal comfort research community that "acceptable" is synonymous with "satisfaction", and that "satisfaction" is associated with thermal sensations of "slightly warm", "neutral", and "slightly cool". Given the above-mentioned, it is therefore safe to state that thermal comfort, from the perspective of personal factors, is heavily a discretional determination of the acceptability of indoor conditions by an occupant. The ambiguity of the measure of personal factors will need a qualitative study of the occupants on their perception of acceptable indoor conditions within the mud hut. Due to the stated ambiguity of personal factor based models, this study shall focus on the thermal comfort as determined from environmental factors only. The indoor air temperature model is therefore developed based purely on the outdoor ambient temperature and solar irradiance.

1.6 Organisation of Thesis

This study is presented in the following logical format;

- Literature survey is presented in chapter 2.
- The research methodology (design and process), is given in chapter 3.

- The heat transfer function is then developed in chapter 4.
- Chapter 5 records and discusses the results, and a validation is performed.
- Conclusions and recommendations arising from this study are presented in chapter 6.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

McHenry [42] claims that in the earlier primitive years, people used to construct temporary shelters with wood and mud due to their nomadic lifestyle. It is reported that earth (soil) has been used for thousands of years as a building material [43]. Egyptians pioneered earth construction since the 10th Millennium BCE [18,44,45], and according to Rodriguez and Saroza [46], the Biblical walls of Jericho were probably built of adobe bricks. It is safe to assume that adobe bricks were the earliest form of earthen construction techniques because they require no machining processes. Claims of adobe bricks dating from as far back as 6,000 BCE have been found in places like Turkestan, Assyria, Egypt and Turkey.

Depending on climatic conditions, topography and living requirements of inhabitants of an area [51] ,varied methods of earth construction among them adobe, rammed earth, cob, wattle and daub, soil bags and compressed earth blocks are used [53]. Many parts of the world are characterized by these varying earthen architecture techniques as seen on Figure

2.1 by Guillaud H and Houben [54].

Figure 2.1: World distribution of earthen buildings with varying earthen techniques [54]

Even though the mass production of the conventional modern construction materials caused a decline of adobe brick buildings in the 19th century [47], studies by Dethier, Coffman and the United Nations (UN) [48–50] report that nearly 30% of the total population of the world still resides in earthen houses. The foregoing is attested to by Sharma et al. [51] and Singh and Singh [52], noting that earth is widely used as a building material in Europe and 55% of Indian houses are made from earthen walls. Dethier, Coffman and UN's claims are further supported by Lyamuya and Alam [40] in depicting that some institutional buildings in West Africa are made from Compressed Earth Bricks (CEB) as shown in Figure 2.2.

Figure 2.2: A primary school in Guinea built with CEB

In Botswana, 45.8% of all houses were earthen as at 1991 national census [40]. There is scarcity of data on the adobe hut statistics after 1991. However, by observation, the most used earthen building technique in Botswana is the adobe brick, which is why it is the main investigation of this study.

2.2 Adobe bricks; definition

As explained by Larson [55], adobe bricks are either made by hand (dipolwane, meaning uneven shaped bricks) or by a simple wooden mould/form as seen in Figure 2.3 [56] and left to be dried by the sun. The word ‘‘adobe’’, can be traced to a Middle Egyptian word ‘‘dj-b-t’’ meaning mud brick, and later evolved into Demotic, Coptic, Arabic, and then Old Spanish as ‘‘a-dobe’’, still meaning ‘‘mud brick,’’ and eventually English borrowed it from Spanish in the early 18th century [57]. Rael [58] proposes a ration of clay 14-15%; silt 22-32%; sand 61-62%; gravel 2-7% for an adobe brick mixture. In other areas, they strengthen the bricks by adding straw, rice husks and other vegetative fibres to the mixture while in Botswana, cow dung is used as a stabilizer.

Figure 2.3: Production of adobe bricks.

2.3 Properties of adobe soil

Table 2.1 [59] and Table 2.2 [60] provide generic properties of soil in the locality of Ankara, Turkey and the chemical composition of adobe soil in Adana, Turkey, respectively. The mechanical properties of soil are inferior when compared to cement.

Table 2.1: Properties of adobe soil at standard consistency [59]

Properties of adobe soil at standard consistency	
Natural water content (%)	34
Dry unit weight (kN/m3)	16
Compressive strength of 7 x 7 x 7cm cubes (MPa)	4.0
Tensile strength (kPa)	39.2
Shrinkage (2.5 x 4.0 x 20 cm bars) (%)	7.1
Softening in water (min)	59.0
Geotechnical properties	
Specific gravity	2.68
Properties of adobe soil at standard consistency	
Organic matter (%)	2.1
Liquid limit (%)	47.1
Plastic limit (%)	16.3
Plasticity index (%)	30.8
Shrinkage limit (%)	13.3
Clay content (%)	49.0

Table 2.2: Chemical and physical composition of clay [60].

Mineral		Concentration								
		Cation					Anion			
Clay	Sand	Silt	Ca+	Mg+	Na+	K+	HCO3-	CO3-	CL-	SO4-
32.04	43.44	24.52	3.5	3.7	0.31	0.31	4.28	0.44	1.3	4.49

2.4 Adobe constructions around the world

Adobe construction has developed over the years to an extent that an expert of adobe construction, Quentin Wilson, claims that, ‘‘in New Mexico, Arizona and other parts of Southwest United States, adobe is considered a premium building material. Movie stars and rich people want adobe homes and we can see them on the websites of the expensive real estate companies (like) Sotheby's, Century 21 and Coldwell Bankers'' [61]. Adobe is not only used in vernacular architecture. As seen on Figure 2.4 [62], South Africa also has great examples of modern houses built with adobe bricks.

The African Organization for Standardization (ARSO) with Southern African Development Community Cooperation in Standardization (SADCSTAN) have developed a harmonized standard for rammed earth buildings and named it SADC ZW HS 983:2014: Rammed earth Structures –Code of Practice. Germany, New Mexico, Australia and New Zealand all have some form of earth building codes or technical recommendations [63–67]. In the education front, some Universities in the United States of America, Europe and Asia have now developed modules of construction techniques at a technical level. Besides the technical courses, research is ongoing at postgraduate level of many Universities, including in the University of Botswana, where this study is being conducted. Even though there is some

Figure 2.4: Adobe brick homes in Lynedoch, Ecovillage (a), luxury double-story house in Lynedoch, Ecovillage (b). Photos by Pierre Roux [62]

form of progress in the areas of earthen building construction standardization, building codes development and education (professional and technical) globally, adobe brick construction, as a specific form of earthen construction, lags behind in Africa and in particular, Botswana.

2.5 Adobe constructions in Botswana

Botswana has no standards related to earthen walls, but has a code of practice (BS 208: 2008) for thatching. MacDoughall [68], Martin et al. [69] and Morton [70] all express a

common sentiment of lack of scientific data and the need for further investigations in earthen construction research.

The description of a traditional Tswana hut similar to the one depicted by Grant and Grant [70] on Figure 2.5 is best given by Lyamuya and Alam [40] thus;

> A traditional Tswana house consists of a cone roof over a cylindrical wall. The roof structure is made of timber rafters covered with grass/thatch. The walls are built of hand moulded mud bricks of various sizes and shapes which are placed in vertical layers and immediately plastered with a rough coating of mud. One or two more coatings are added later to fill the cracks.

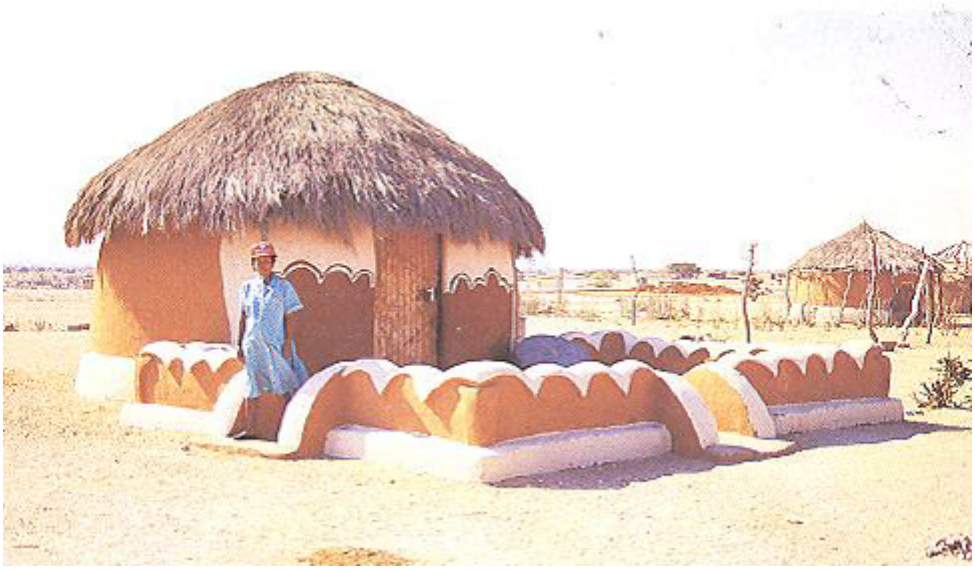


Figure 2.5: A typical traditional hut in Botswana [70].

The final coating is a thin layer of a mixture of cow dung, soil and water. Cow dung is generally put in the mixture as it acts as a binder. Finally the wall is coloured and decorated using different types of soil or lime. Other structural members are seen clearly on Figure 2.6. The centre main pole (pinagare), holds the apex of the conical roof to the ground (at the centre of the foundation). The rafters or incline battens (ditlhomeso) run at an inclined

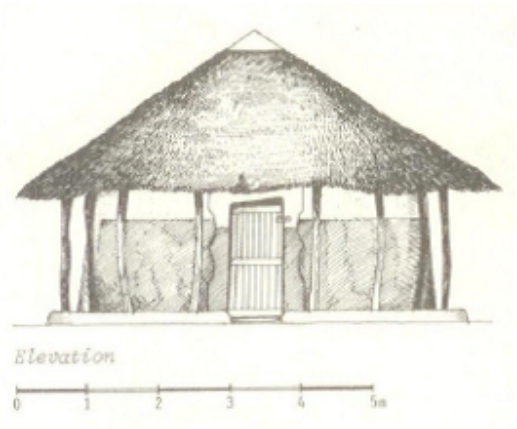
angle connecting the top of the centre pole to the vertical outside side poles (maotwana), which surround the wall almost at equidistance from each other.

The side poles are about the same height as the wall. The purlins (mabalelo) run on top of, but perpendicularly across the inclined battens, connecting the inclined battens to the thatch. At every intersection of the three (purlin, inclined battens and the thatch), they are wound together by tree barks (kgobati) made from tree bark Finally, there are horizontal battens that are placed on top of the wall, and they run from wall to wall through the centre pole, connecting it (centre pole) to the wall and the inclined battens. All the poles are normally cut from strong local trees that are not easily destroyed by termites. The roof/thatch is made from locally available grass and is closely stacked to prevent water seepage.

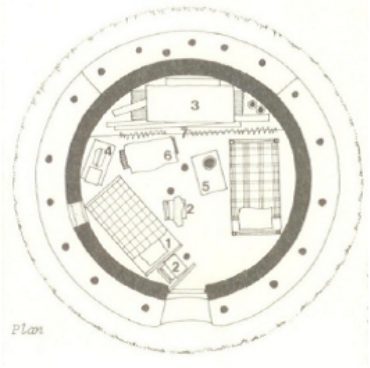
Table 2.3: Atterberg-limits and sedimentation results on soil samples from Mahalapye and Tsabong [72].

	Mahalapye	Tsabong
Sand content (%)	27	63
Clay content (%)	48	14.5
Silt content (%)	25	22.5
Liquid limit (LL)	31	50
Plastic limit (PL)	19	24
Plasticity index (PI)	12	26

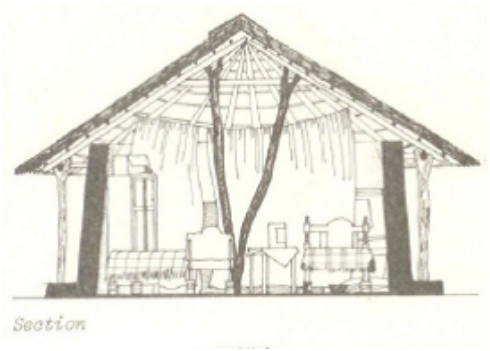
The composition of Botswana soil in Table 2.3 by Ngowi [72], when compared to that in Table 2.1, shows that the clay content in Ankara, Turkey soil is higher than the Botswana one but close to that of Mahalapye. The Liquid limit of Ankara soil is significantly higher than that of Mahalapye but close to that of Tsabong. The Plastic limit of Ankara is close to that of Mahalapye, but both less than that of Tsabong. The Plasticity index of Ankara is close to that of Tsabong, while that of Mahalapye is significantly low at only 12. This shows



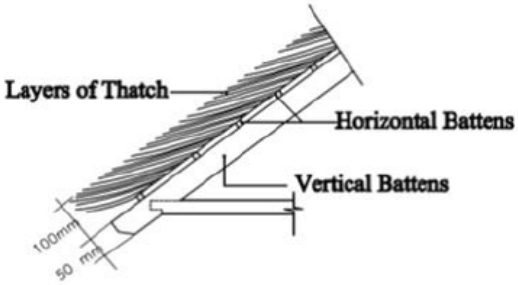
(a) The side elevation



(b) The plan view



(c) The half cross section



(d) The cross section of the roof

Figure 2.6: The front view (a), the plan view (b), the half cross elevation [71] and the cross section of the thatched roof [1].

the extent to which soil composition can vary within a locality, and yet match one in a region far away.

2.6 Mechanical characteristics of the adobe mud house

Due to the low mechanical property values of adobe buildings [98], different methods have been used to improve the strength of adobe bricks. Natural fibrous ingredients and stabilisers like rice husks, sugar cane bagasse, jute, sisal fibres, coconut fibres, straw bale, wool and etc., [99–102] have been used for a very long time.

Binici et al. [103] reports that thermal conductivity variations of fibrous adobe bricks follow that of density, which conclusively means low density adobe bricks have slower heat transfer rate. This is a great thermal mass advantage as it enhances time lag. Fibre reinforced bricks have been reported to out-perform concrete and non-reinforced adobe bricks in terms of compressive strength [8] and in reducing large fluctuations of indoor temperatures in summer and winter [10]. The fibres increase the elasticity of adobe bricks and they are strong against tensile and compressive stresses [28]. The flexibility of fibrous adobe bricks enhances their resistance to earthquakes [103], even though vegetable fibre gives adobe bricks inconsistent durability when wet and is liable to rot [104]. Furthermore, some vegetable fibres are attacked by insects, especially termites [105,106].

Giamundo et al. [107] reported that the strength ratio (actual over maximum) of adobe bricks for compressive and tensile strength increases with curing/drying time (Table 2.4), while Varum et al. [108] have reported mechanical properties of adobe and mortar without reference to curing time (Table 2.5). Adobe buildings are mainly vulnerable to horizontal external tensile forces and a building without braces may collapse in earthquakes of 0.20 g acceleration [109].

Table 2.4: Mechanical properties and curing time of bricks [107].

Properties	Fresh plain soil	Plain soil	Plain soil	Mortar B
Curing time (days)	0	28	>28	0
Tensile strength (MPa)	39.2	78.4	98	98
Compressive strength (MPa)	3.32	6.64	8.3	8.30

Table 2.5: Mechanical properties of adobe bricks [108].

	Compressive strength (MPa)	Flexural strength (MPa)	Tensile strength (MPa)	Modulus of Elasticity
Adobe units (from houses)	0.70 to 2.15	-	0.13 to 0.4	87 to 448
Mortar	1.19	0.4	-	128 to 251

2.7 Thermal performance of the adobe house

This review focuses narrowly on heat transfer on adobe constructions roofed with thatch. The variants of earthen construction such as rammed earth, CEB, natural or synthetic fibre-earth composites are only mentioned where a comparison with adobe is necessary. De Barrio and Guyon [77] stated that thermal phenomenon is a sum total of;

- Heat conduction within the solid elements,
- Long-wave irradiace exchanges among the indoor surfaces, and between the outdoors surfaces and the environment,
- Solar irradiace transmission and absorption,
- Convective heat transfer at the surface-air interfaces,
- Heat transfer by air exchanges among building zones, and between every zone and the building environment.

2.7.1 The Adobe Wall

The specific heat capacity of the adobe wall is 1260 J/kg K and density is 1540 kg/m^3 [78]. In literature (Table 2 4), values of thermal conductivity differ greatly between 0.18 to 1.5 kW/mK. On thermal performance studies, adobe (sundried mud bricks) houses have not received as much research attention as rammed earth and CEB.

Dili et al. [86] studied the internal thermal environment in a traditional building in Kerala, India, by in-situ measurements. Mohammad and Shea [86] used design builder software to evaluate the performance of modern building thermal envelope designs in the semi-arid continental climate of Tehran. Yoshino et al. [87] studied four traditional farm houses using both in-situ and computer simulation. All their findings reported that cooling techniques for earthen traditional buildings such as solar shading by a thatched roof, earthen floor and natural ventilation are effective for interior cooling.

Table 2.6: Heat transfer rate across adobe wall versus across cement based brick wall [29].

Month of the year	Heat transfer load (W/m^2)	
	Mud wall	Cement wall
January	17.25	17.62
February	25.62	23.07
March	22.79	24.05
April	31.92	46.65
May	36.59	57.54
June	37.05	57.31
July	34.11	44.61
August	32.4	42.03
September	31.47	40.76
October	26.79	34.71
November	24.99	25.35
December	17.42	17.74

Mishra [29] compared the heat transfer load between the adobe wall and the cement brick wall in Ghaziabad, India, and it was evident that the mud wall has a lower heat transfer rate (Table 2.6). This means that the mud wall performs better in terms of heat retention, which will help with the night ventilation if the time lag is sufficient.

Givoni and Katz [88] have studied and concluded that the effect of wall thickness, building orientation, thermal conductivity and heat capacity have significant contributions to indoor thermal gains/losses. The investigation of overall thermal conductivity of the adobe wall by Vandermeer and Bickle [89] revealed that variables that affect heat transfer significantly are the external walls and the climatic region of where the building is, but the effect of window size on thermal performance depends on the season.

Table 2.7: Literature collection of thermal conductivity of adobe.

Type of adobe	Thermal conductivity (kW/m.K)
Fired adobe [79]	0.244
Concrete brick [79]	0.627
Adobe with straw [80]	0.180
Adobe [80]	0.240
Adobe [81]	0.46-0.81
Adobe with straw [82]	0.362
Adobe [47]	$\sim$1.5
Mud brick [83]	0.697
Laterite mud [84]	0.523
Mud brick [85]	0.6

In their study of the effect of water saturation on the rate of heat transfer through the walls, Rees et al. [90] concluded that the main determinant of heat transfer in soil is water saturation level, and that more highly saturated soil will conduct heat at a faster rate. Contrarily, Yokobahashi and Sato [82] recorded a constant of 0.362 kW/mK (Table 2.7) heat conductivity, and that its variation in response to either temperature or moisture content is insignificant.

Alausa et al. [84] compared thermal conductivity, thermal resistivity and thermal diffusivity between concrete blocks and laterite mud bricks. Their results showed that both thermal conductivity and diffusivity are higher in laterite mud bricks, while concrete blocks have higher thermal resistivity. High thermal resistivity indicates that the concrete wall will resist heat from flowing into the house, while laterite mud bricks (lower resistivity) will allow heat flow better than concrete bricks [84]. For climates with long summers, materials with low thermal resistivity (in this case laterite mud bricks) are desirable to keep the indoors cool.

Malama and Sharples [91] have carried out a sensitivity analysis of a traditional round hut in the tropical upland climate of Zambia in which they concluded that the mud walls performed better than the thatched roof and that increasing the thickness of the floor does not help comfort levels for their climate, contrary to Koeningsberger et al.'s [92] suggestion.

A study comparing three (3) buildings, by Makaka and Meyer [75] in the Eastern Cape of South Africa presents a hut whose wall is grass, plastered with mud (inside and outside) as thermally performing better than a cement brick house, and a hut made from stone and clay. Even though adobe has been proven by many studies as superior to concrete constructions in aggregation of thermal performance and sustainability, it is not insulative and has high infiltration rates [13].

2.7.2 The Thatched roof

The thermal performance of earth and earth-thatch composite roofs and their varying shapes (the vault shaped roof, the flat roof and the dome roof) have been researched by several authors [37,93,94] mostly in India. Non-composite roofing thatch in its Botswana conical

shape, has suffered a great deal of neglect in research as there are no literature sources available.

In Brazil, Almeida et al. [95] conducted a comparative study of the functional relationships between external and internal temperature within sheds that are housing dairy calves. The three (3) different sheds under study were roofed with fibre cement, recycled tile and thatched roof. The results showed a temperature drop of 0.38% from external temperature to internal temperature within the thatched shed, as compared to 2.02% and 1.15% of fibre cement and recycled tile respectively. The authors [95] ascribe this to thatch's lower values of thermal conductivity (0.12 W/m°C) and thermal absorbance (46%), making it an efficient roofing material, and concluded that internal temperature of the sheds reveals the influence of the roofing material's thermal absorbance.

Kalu et al. [96] studied the effects of different roofing materials by comparing internal temperatures between two mud brick houses (Figure 2.7), one roofed with thatch and the other with corrugated iron sheets, both built in Abakaliki, Nigeria. The authors reported a significantly lower internal temperature in a thatched roof hut throughout the day, and a difference of 4°C (internal minimum temperatures) and 6°C (internal maximum temperatures) between the huts [96]. Among others, some authors credit this good thermal performance within the thatched roof to the high porosity of thatch which reduces heat flux by evaporation [97].

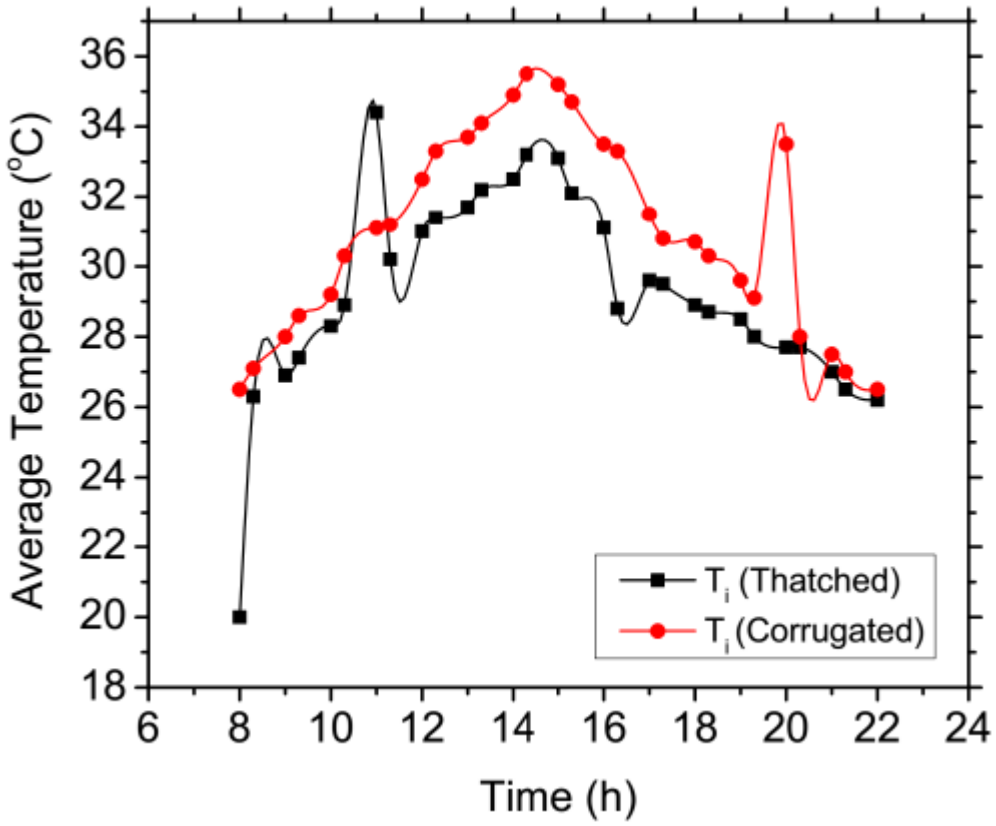


Figure 2.7: Average temperature against time (thatched and corrugated roof) [96].

2.8 Building Physics

In general, systems have a natural inclination to want to attain a point of equilibrium. This equilibrium is attainable by transport phenomena (mass, heat and momentum transfer) through a medium of transfer and is driven either naturally or mechanically. In a natural system, it is by pressure, temperature or concentration gradient, all depending on the element being transferred. The natural inclination of systems to want to attain a point of equilibrium is represented by the energy balance equations given here as Equations 2.1, 2.2 and 2.3.

$$Q_{acc} = \sum Q_{gain} - \sum Q_{loss} \tag{2.1}$$

Where;

$$Q_{gain} = Q_{surfaces} + Q_{gen} \tag{2.2}$$

$$Q_{loss} = Q_{ventilation} \tag{2.3}$$

The universal source of heat is the sun. Building walls and roofs are buffers between inside and outside conditions. In natural ventilation, the desire is to achieve an internal comfortable environment by natural techniques. The theory of heat transfer from the outside to the inside through the walls, the thatch and the openings is presented in this section.

Adobe has thermal mass, which according to Olukoya Obafemi and Kurt [73], is the capacity of a material to store absorbed heat and later release it. This allows excess heat to be absorbed during the summer, which reduces the cooling loads but reduces the heating loads in winter [73]. It is measured in joules (J) of thermal energy stored up per unit of mass (J/kg K). However, due to low thermal resistance, adobe still has poor insulating properties in winter [73].

Ventilation has to do with replacement of inside air by new air from outside within a volume. It is made possible by infiltration rate. Infiltration occurs through all kinds and sizes of openings. Doors, windows, cracks (laminar or turbulent) and door-floor clearance are among the openings that infiltration occurs through.

$$Q_1 = UA(T_{s(av)} - T_1) \tag{2.4}$$

$$Q_2 = UA(T_{sX} - T_{s(av)}) \tag{2.5}$$

Equation 2.4 is the average heat flow rate over a 24 hour day, and is presented in the form of the steady state equation. $T_{s(av)}$ is the daily mean sol air outdoor temperature while T_1 is the inside temperature, U is the u-value and A is the surface area.

A factor of time lag (in X hours) of the thatch or the wall is introduced in Equation 2.5. The temperature difference is now taken between $T_{s(av)}$ and T_{sX} (which is the outdoor sol air temperature at X hours earlier). The high thermal mass of earth enables the mud hut to store heat that is absorbed during the day [73], and only release it hours later. Makaka and Meyer [75] report a time lag of 4.5 hours on a study carried out in Alice, South Africa. The cycle of heat storage and discharge works best when combined with means of heat dissipation, like night ventilation, so that the discharge phase does not add to overheating [76].

Room admittance (Y), in Equation 2.6, is the thermal impedance (or impedance of heat flow), which controls fluctuations of the internal room temperature. The major determinants of thermal admittance are thermal diffusivity and thickness.

$$Y = Q_{alt}/AT_{swing} \tag{2.6}$$

Where T_{swing} is the temperature swing (°C), and Q_{alt} is the alternating heat input (W). The larger the swings in outdoor temperature, the more important the effect of thermal mass [76]. Environmental temperature swing, where the rate of heat input and temperature are changing slowly is given by;

$$T_{swing} = Q_{alt}/((\sum AY + 0.33VN)) \tag{2.7}$$

Q_{alt} is the total alternating heat gains, N is the number of air changes per hour and V is the room volume. The total alternating heat gains is given as;

$$Q_{alt} = Q_{alt.glass} + Q_{alt.opaque} + Q_{alt(cond.)glass} + Q_{v(alt)} \tag{2.8}$$

$$Q_{alt.glass} = S_a I_{alt} A_{glass} \tag{2.9}$$

Where the alternating intensity (I_{alt}) is;

$$I_{alt} = I_{peak} - I_{av} \tag{2.10}$$

In this case I_{peak}, is peak solar irradiance, I_{av} is mean solar irradiance over a 24 hour period, S_a is alternating solar gain factor and A_{glass} is the area of the glass. The other components of the total alternating heat gains are in Equation 2.11 (alternating heat gain through opaque), Equation 2.12 (alternating conduction heat gain through glazing) and Equation 2.13 (alternating ventilation gain).

$$Q_{alt.opaque} = AU(T_{sX} - T_{s(av)}) \tag{2.11}$$

$$Q_{alt(cond.)glass} = UA_{glass} T_{0(swing)} \tag{2.12}$$

Where $T_{0(swing)}$ is the diurnal air temperature swing of the (peak-mean) temperature.

$$Q_{v.alt} = 0.33VNT_{0(swing)} \tag{2.13}$$

Therefore, temperature swing normally simplifies to Equation 2.14 when $Q_{alt.opaque}$ is neglected as it is usually insignificant.

$$T_{swing} = (S_a I_{alt} A_{glass} + U A_{glass} T_{0(swing)} + 0.33VNT_{0(swing))}/(\sum AY + 0.33VN) \quad (2.14)$$

2.9 Thermal models of naturally ventilated houses

This review of thermal models is only on naturally ventilated buildings and excludes those that run on mechanical ventilation. Thermal models of naturally ventilated buildings can be classified into two major categories; being ambient temperature based and surface temperature based. Brager and de Dear [110], David Ogoli [111] and Givoni's [112] have widely researched on ambient temperature based models, while Ponni and Baskar [113] dominate recent models that are based on surface temperature.

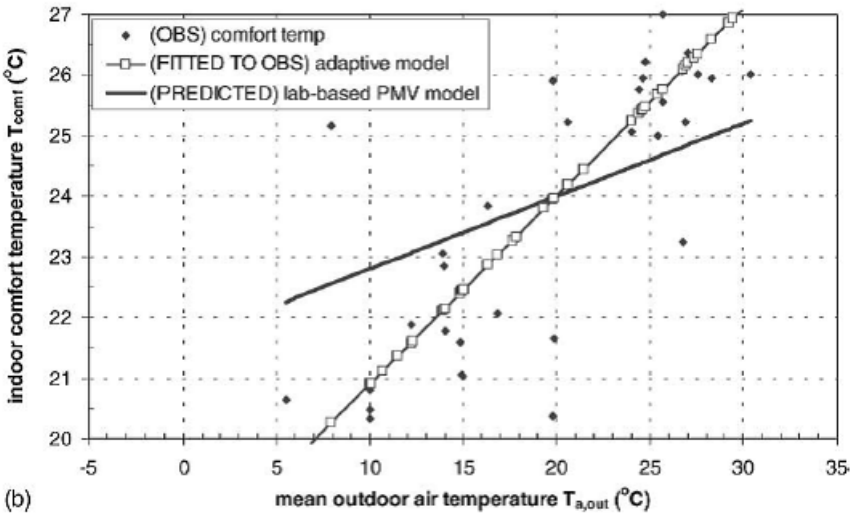


Figure 2.8: An adaptive comfort standard (ACS) model [110].

This section is premised by a new adaptive comfort standard (ACS) model (Figure 2.8) which was accepted and incorporated into ASHRAE Standard 55. Though it is based on

personal factors, it applies to naturally ventilated buildings. Its methodology is the most inclusive data set as it covers four continents, 160 buildings, and 21,000 raw data sets [110]. It is applicable to naturally ventilated buildings in warmer climates during summer. However, data sets that cover wide geographical areas indiscriminate of climatic conditions may lack the preciseness that is often critical in predicting indoor temperatures for specific climatic conditions.

$$T_{comf} = 0.31T_{a,out} + 17.8 \tag{2.15}$$

Givoni [112] developed a model (Equation 2.15), based on ambient temperature. The model applies for continuously cross ventilated buildings, in which he found that indoor maximum temperature tends to follow closely the outdoor maximum temperature. This model, (Equation 2.15), is applicable at air speed $v = 0.25m/s$, humidity $RH = 50\%$, clothing insulation $= 0.5clo$ and metabolic rate $M = 1.3$, where T_{comf} is inside comfortable temperature, $T_{a,out}$ is mean outdoor dry bulb temperature.

Another model by Givoni [112], presented in Equation 2.16, is correct for high thermal mass, white coloured and shaded buildings with infiltration, on a particular day.

$$T_{max-in} = T_{max-out} - 0.31(T_{max-out} - T_{min-out}) + 1.6 \tag{2.16}$$

Where T_{max-in} is maximum indoor temperature, $T_{max-out}$ is maximum outdoor temperature and $T_{min-out}$ is minimum outdoor temperature.

Based on Givoni's model (Equation 2.16), Ogoli [111] developed an ambient temperature based model (Equation 2.17), using closed high thermal mass buildings of Kenya, which is generally an equatorial high altitude (1,798m above sea level) region [113];

$$T_{max-in} = T_{max-out} - 0.488(T_{max-out} - T_{min-out}) + 2.44 \tag{2.17}$$

Where T_{max-in} is maximum indoor temperature, $T_{max-out}$ is maximum outdoor temperature and $T_{min-out}$ is minimum outdoor temperature.

Ponni and Baskar [113] have developed a model (Equation 2.18) in the tropical climate of India that is based on surface temperature. The model is correct for closed buildings, of brick and mortar walls of high thermal mass, different roof materials of low thermal mass and at 2° roof slope.

$$T_{indoor} = 0.196(T_{inw} + T_{isw} + T_{iew} + T_{iww} + T_{iroof}) \tag{2.18}$$

Where T_{indoor} is the indoor temperature, T_{inw} is the indoor surface temperature of the north wall, and T_{isw} is the indoor surface temperature of the south wall, T_{iew} is the indoor surface temperature of the east wall, T_{iww} is the indoor surface temperature of the west wall and T_{iroof} is the indoor surface temperature of the roof.

The models by Givoni, Ogoli, Ponni and Baskar, are all linear and somewhat similar in pattern. However, their predicted values of indoor temperature differ by a range of 1°C to 3°C, which according to Ponni and Baskar [113], may be due to ‘‘1) studies being conducted in different climates, 2) Givoni's studies being based on open naturally ventilated test chambers, 3) Ogoli's perfomed in closed test chambers in Nairobi, Kenya, 4) all these studies carried out at different sea levels, 5) and finally some of Ponni and Baskar's studies carried

out in insulated roofs.''

Conclusion

Though a good number of natural ventilation models exist on the prediction of indoor air temperature as presented above, to a large extent most of them are assumed to work across board, indiscriminate of shape, geometry, construction material composition and climatic conditions. Further to that, as observed by Ponni and Baskar [113], few of such models consider the weight per unit area of the wall, and of the roof or of the whole structure.

There is no cohesion in the literature concerning the value of the specific heat capacity of thatch. The CIBSE guide [114] gives the specific heat as 180 J/kg K, while Szokolay [115], quotes the specific heat capacity of thatch as 1420 J/kg K. Thatch as an exclusive roofing material which is the case for the Botswana hut, not as a composite, has suffered a great deal of neglect in research. However, roofs of adobe and adobe-thatch composites have been researched mostly in India. The conical roof shape that the Botswana hut is known of, has also not been featured among several roof shape studies [37,93,94] which studied the vault shape, the flat roof and the dome roof.

The geometry and material composition of the walls play a significant role in the indoor ambient air temperature. The Botswana adobe house can take the form of a four sided/walled shape, but the cylindrical shaped wall enjoys prominence among many households. Studies have not investigated the cylindrical shape, and many have assumed their models will work across different building materials, which posits a challenge as thermal capacity and conductivity differs widely across materials. Ogoli's studies were carried out in Kenya (equatorial

high altitude region), Ponni and Baskar [113] in Chidambaram, Tamil Nadu, India (tropical climate), Basharat and Ahmad [93] in Bangalore, India. The said studies cannot be assumed true or generic for all climates. There is therefore a need to investigate and develop a model for the climate of Botswana, in this case, for an adobe hut.

CHAPTER 3

METHODOLOGY

This chapter develops and records the methodology of a mathematical indoor air temperature predictive model within an adobe brick house as it responds to independent variables (the outdoor dry bulb temperature and solar irradiance). Heat transfer through the walls, the floor and the thatched roof is dependent upon outdoor ambient air temperature, solar irradiance, wind speed and absolute humidity. The transient model was developed using heat transfer equations based on Fourier's law of heat transfer.

The outline of the chapter is;

- The Assumptions,
- The research design,
- The description of the study hut,
- The variables,
- The input parameters and the experimental set–up

3.1 Assumptions

The following assumptions were made in developing an energy balance equation for the cylindrical hut, with a conical roof.

- Heat transfer is one dimensional, along the thickness axis, (x).
- The system undergoes a transient heat transfer due to solar irradiance and varying ambient temperatures.
- The wall layers (brick and plastering) are homogenous since their thermal conductivity is equal, being made from the same material.
- 2.5 Air Changes per Hour
- Thermal properties and coefficients are assumed constant and independent of temperature variations.
- Solar intensity is measured, averaged over 12 hours of daylight and the average value is taken as constant over the 12 hours of daylight.
- The heat exchange between isothermal mass (furniture, cupboard, and computers) and room air is neglected as they are usually non-existent within a hut.
- The rate of heat loss through the ground is assumed zero (0), since the ground surface temperature is assumed equal to room air temperature all the time in transient conditions.
- Wind speed and absolute humidity are measured and recorded as conditions within which the developed model is correct.

3.2 Research Design

The model was developed in MATLAB. The research design process is presented by a conceptual diagram shown in Figure 3.1.

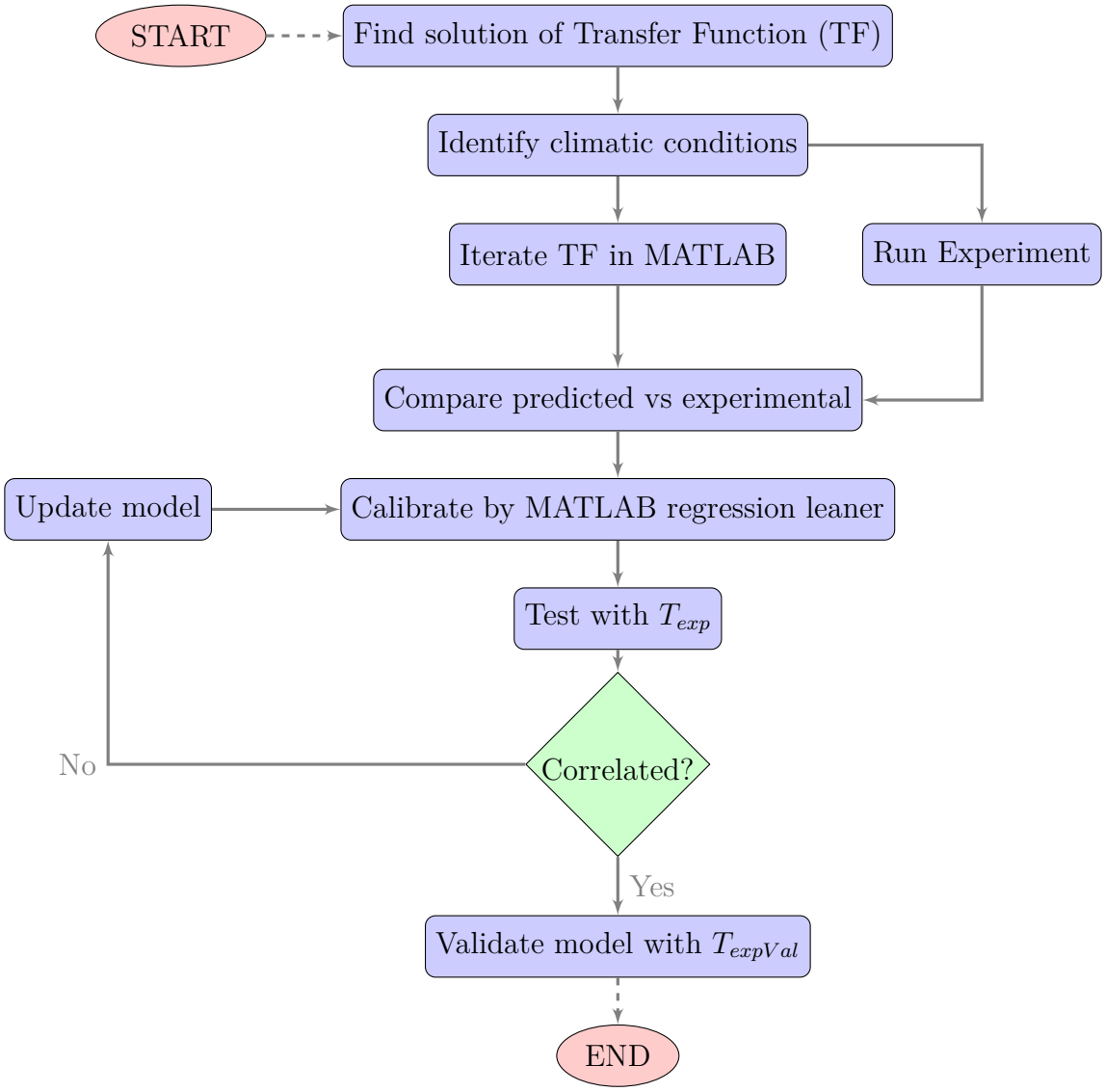


Figure 3.1: The research design's process conceptual diagram

3.3 The Study Hut (Description)

The hut under study is in the University of Botswana (Figure 3.2), and it belongs to the Department of Culture, Sports and Recreation. The hut is circular in shape (Figure 3.3) and has its door facing west, and two (2) windows, one on the north and the other on the south. The dimensions of the hut are presented with design parameters in Figure 3.4 and on Table 3.1.

Figure 3.2: The Tswana hut at the University of Botswana [Photo by: Kabo Letlhare-Wastikc].

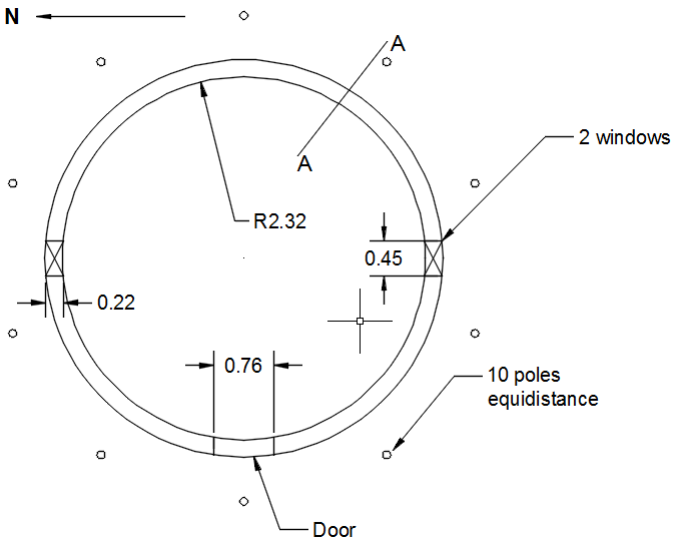


Figure 3.3: Plan view of the study hut.

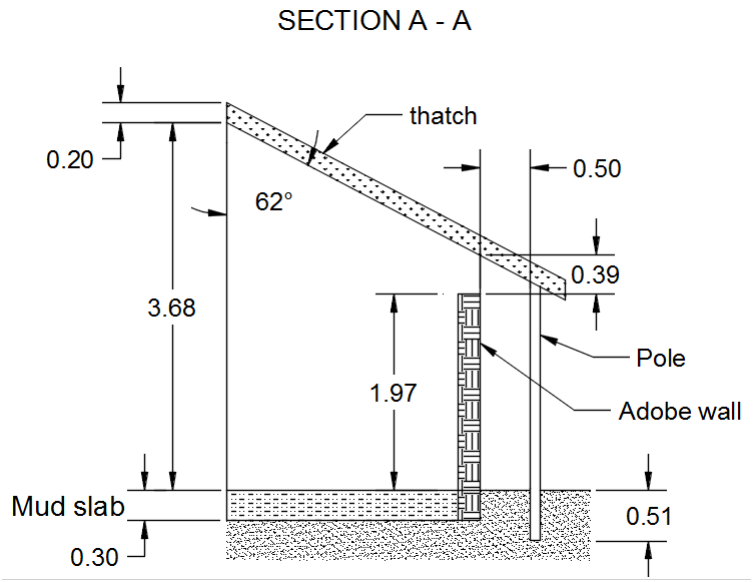


Figure 3.4: Sectional view [A-A] of the study hut.

The roof: The roof is conical in shape and is made of thatch from local grass, which has since turned black. It rests on a cylindrical wall, owing to the circular shape of the hut. The slope of the roof is 28°from the horizontal. The total surface area of the roof is 40m^2 (Table 3.1)

The wall: Adobe bricks were used to make the wall, and they were plastered internally and externally with a mud cow dung mixture, rendering the wall brown in colour. The lateral surface area of the wall is 29.5m^2 Appendix C. The openings: The hut has an opening of 0.39 m between the wall and the roof. There are two (2) windows, both of which have not been fitted, leaving just an opening. The door is made of wood.

The Overhang: The thatch roofing, as it runs from the apex downwards, it runs past the top end of the wall, ending at a protruding vertical distance of 0.06 m lower than the wall height, but 0.85 m horizontally from the wall. This is called an overhang (maribela).

Table 3.1: The design parameters and construction details of the study hut.

No.	Parameter	Value	Source
	Design parameters		
1	Convective heat transfer coefficient (outside)	23 W/m^2K	[93]
2	Convective heat transfer coefficient (inside)	6 W/m^2K	[93]
3	Thermal conductivity of the adobe brick and plaster (wall)	0.6195 W/mK	[93]
4	Thermal conductivity of the thatch (roof)	0.07 W/mK	[114]
5	Thermal conductivity of the wood (door)	0.174 W/mK	[93]
6	Absorptivity of the adobe brick and plaster (wall)	0.6	[93]
7	Absorptivity of the thatch (roof)	0.5	[93]
8	Absorptivity of the wood (door)	0.45	[93]
9	Emissivity of the thatch (roof)	0.9	[93]
10	Specific heat capacity of room air	1005 J/kgK	
11	Air density	1.2 kg/m^3	[93]
	Construction details		
12	Roof area	40 m^2	
13	Wall area (lateral surface area of the cylinder)	29.5 m^2	
14	Door area	1.35 m^2	
15	2 Windows area	0.6 m^2	
16	Opening area (between roof and wall)	6.22 m^2	
17	Room air volume	42.2m^3	
18	Wall thickness	0.22 m	
19	Roof thickness	0.2 m	
20	Door thickness	0.05 m	
21	U-value of Roof	0.54 W/m^2K	
22	U-value of Wall	1.39 W/m^2K	
23	U-value of Door	0.94	
24	Air change per hour	10 ACH	
25	Mass of room air	50.6 kg	

3.4 Input Parameters

This section lists all the input parameters of the predictive model and the experimental set-up.

3.4.1 Meteorological data

Gaborone long term average climate data is provided by African Regional Climate Centre (ARCC) [120]. The ARCC states that the coldest months in Gaborone are June and July at minimum average of 5.1°C and 4.0°C respectively, taken over the period 2001 to 2010. The hottest months are December and January at a 10 year (2001 - 2000) maximum average of 32.5°C each. The hot season is however experienced from as early as September with a 10 year maximum average of 30.2°C and a maximum average of 32.4°C in October. The experiments were set-up on July 05th 2018 in the University of Botswana in Gaborone, whose elevation above sea level and coordinates are 1,010 m and 24°39' S Latitude, 25°54' E Longitude [121].

3.4.2 Design parameters

Table 3.1 presents design details, physical and thermal parameters of the hut. The physical parameters of the hut were measured directly from the hut and the calculations of area and volume are done manually as per area and volume formulae. The rest of the thermal parameters, coefficients and constants were taken from literature.

3.4.3 Variables

The dependent variables are the openings, the interior wall surface temperature and the interior thatch/roof temperature, which determine the interior room air temperature in degrees Celsius (°C). They fluctuate with the magnitude of heat transfer through the roof and the wall. The independent variables are the exterior dry-bulb air temperature. (DBT) in degrees Celsius (°C) and solar irradiance (W/m^2). Both are climatological and they change over time diurnally and seasonally.

3.4.4 Experimental Setup

The outdoor and indoor temperatures were collected on July 05th 2018 and subsequently on July 07th 2018 in Gaborone at the University of Botswana's traditional adobe mud hut. Both days were generally of a clear sky but intermittently cloudy. To have a good representation of temperature changes cycle, the readings were taken from 0600hrs to 0600hrs the next day, which is a complete 24 hour cycle. Temperature was taken per minute and averaged from three (3) temperature sensors of the outdoor temperature, while T_{exp} is the is the per minute average of three (3) temperature sensors of the inside temperature.

3.4.5 Temperature

Appendix 2 is a record of temperatures taken with three (3) temperature sensors outdoor and three (3) temperature sensors indoor. The indoor and outdoor temperatures were then averaged, and the average figures were used. The sensors were of the range -30°C to 110°C. The outdoor sensors were placed at about 5 m from the hut. The indoor sensors were set up

at a height of 1 m above the ground, at the centre of the hut. The temperature was saved over 24 hours in a data logger (Figure 3.5). The temperature data set for the first 24 hours is compared with the MATLAB predicted results for regression to determine correlation. The other 24 hours temperature data set is used to validate the model.

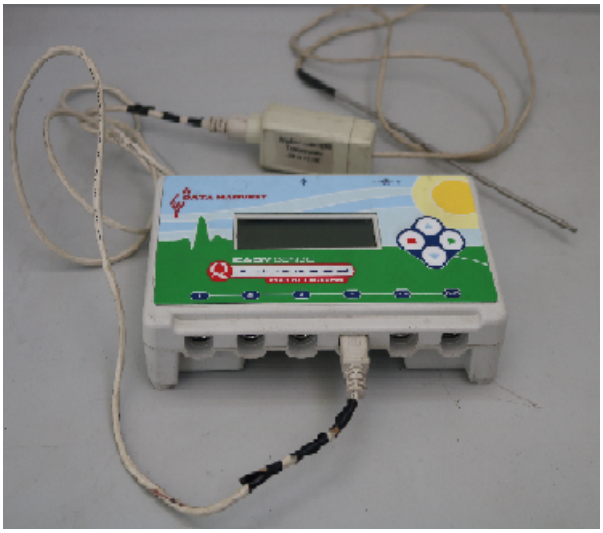


Figure 3.5: Data logger with one (1) temperature sensor.

3.4.6 Solar irradiance

A pyranometer (Figure 3.6) was set up on the external surface of the wall to measure solar irradiance hourly. There was no data logger; therefore the measurements were recorded manually every hour. The least count on the pyranometer is 0.1 W/m^2.

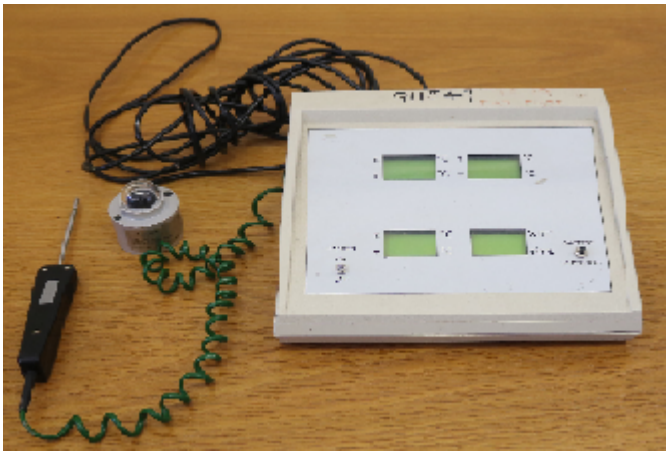


Figure 3.6: Pyranometer for measuring solar irradiance.

CHAPTER 4

THE HEAT TRANSFER MODEL

This chapter fulfils the first study objective; Objective 1: Obtaining the solution of a transient heat transfer function. For the variables used in the formulation of the equations, reference should be made to Figure 4.1 and Figure 4.2.

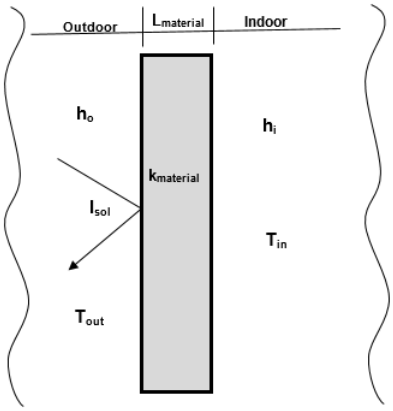


Figure 4.1: Transient heat transfer through building envelope

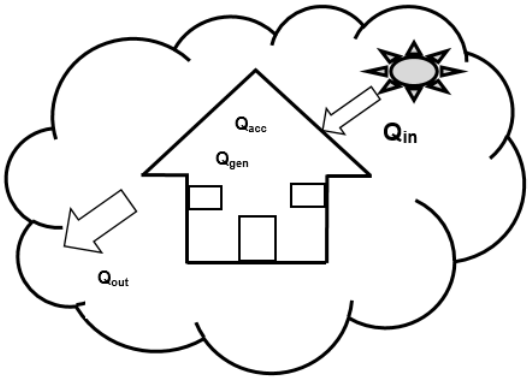


Figure 4.2: Thermal energy balance.

4.1 Objective 1: Solution of a transient heat transfer function

The energy balance equations are given by Equations 2.1, 2.2 and 2.3 in Chapter 2, and the objective model is developed from their basis.

Where;

Q_{acc} =heat energy accumulated in the hut

$Q_{gen} = (q_{hp} + q_1)$ =heat generated inside the hut by furniture and occupants

$Q_{surfaces} = q_{surfaces} = q_{wall} + q_{door} + q_{roof}$

$Q_{loss} = Q_{ventilation} = 0.33Nv_a(T_{in} - T_{out})$ due to roof-wall clearance and window openings

$q_{wall} = (UA_{wall})(T_{sol,wall} - T_{in})$

the same applies for roof and door, taking the respective subscripts. Where; UA is the overall heat transfer coefficient, T_{in} is the indoor dry bulb temperature and T_{out} is the outside ambient dry bulb temperature.

$$Q_{acc} = \frac{dQ_{acc}}{dt} = \frac{dT}{dt} = \rho V C_p \tag{4.1}$$

Where ρ is the air density, C_p is the specific heat of air and V is the total volume compartment of the hut and $T = T_{sol} = [\frac{\alpha I}{h_o} + T_{out} - \frac{\epsilon \delta R}{h_o}]$

Where;

$h_o = h_{ra} + h_{ca}$ in which h_{ra} is radiative heat transfer coefficient and h_{ca} is radiative heat transfer coefficient.

$\delta R = [\frac{cos\beta}{sin\beta}60]$ is the long wavelength irradiace exchange between the surface and the sky for surfaces inclined at 60°, or $\delta R = 60W/m^2$ for horizontal roof surfaces, or $\delta R = 0$ for vertical surfaces.

α = solar irradiace absorptivity (surface solar absorptance or the inverse of the solar reflectance of a material)

I = is global solar irradiance (i.e. total solar irradiace incident on the surface) $[W/m^2]$.

ϵ = emissivity of the surface

If Q_{gen} is eliminated because there are no occupants and there is no furniture within the hut, it then follows from the definitions above that Equation 4.1 takes the form;

$$\rho V C_p \frac{dT_{in}}{dt} = (UA_{door})(T_{sol,door} - T_{in}) + (UA_{roof})(T_{sol,roof} - T_{in}) + (UA_{wall})(T_{sol,wall} - T_{in}) - 0.33Nv_a(T_{in} - T_{out}) \quad (4.2)$$

Dividing both sides by $\rho V C_p$, expanding and collecting like signs, the result is a first order differential equation as follows;

$$\frac{dT_{in}}{dt} = -[\frac{(UA_{door}) + (UA_{roof}) + (UA_{wall}) - 0.33Nv_a)}{\rho VC_p}]T_{in} + [\frac{(UA_{door})T_{sol,door} + (UA_{roof})T_{sol,roof} + (UA_{wall})T_{sol,wall} - 0.33Nv_aT_{out})}{\rho VC_p}] \quad (4.3)$$

If we let

$$P = [\frac{(UA_{door}) + (UA_{roof}) + (UA_{wall}) - 0.33Nv_a)}{\rho VC_p}] \quad (4.4)$$

And we let;

$$Q = [\frac{(UA_{door})T_{sol,door} + (UA_{roof})T_{sol,roof} + (UA_{wall})T_{sol,wall} - 0.33Nv_aT_{out})}{\rho VC_p} \quad (4.5)$$

Rewriting Equation 4.3 we get;

$$\frac{dT_{in}}{dt} = Q - PT_{in} \quad (4.6)$$

The above is a first order differential equation of the form $\frac{dy}{dx} + Py = Q$ which can be solved by multiplying both sides by $e^{\int (Pdx)}$ to get;

$$\frac{dT_{in}(t)}{dt}e^{Pt} + PT_{in}(t)e^{Pt} = e^{Pt}Q \quad (4.7)$$

When the product rule is applied to the left hand side, the following is obtained;

$$\frac{d}{dt}(e^{Pt}T_{in}(t)) = e^{Pt}Q \quad (4.8)$$

Taking the integral (with respect to t) on both sides;

$$\int d(e^{Pt}T_{in}(t)) = \int e^{Pt}Qdt \tag{4.9}$$

$$e^{Pt}T_{in}(t) = Q\frac{1}{P}e^{Pt} + C \tag{4.10}$$

Dividing both sides by e^{Pt} we get;

$$T_{in}(t) = \frac{Q}{P} + Ce^{-Pt} \tag{4.11}$$

When $t = 0$, then;

$$C = T_{in}(0) - \frac{Q}{P} \tag{4.12}$$

which makes Equation 4.11 into;

$$T_{in,pr}(t) = \frac{Q}{P} + [T_{in}(0) - \frac{Q}{P}]e^{-Pt} \tag{4.13}$$

The thermal time constant (ζ) is;

$$\zeta = (\frac{1}{(UA_{door}) + (UA_roof) + (UA_{wall}) - 0.33Nv_a})(\rho VC_p) \tag{4.14}$$

Where;

$(\frac{1}{(UA_{door})+(UA_{roof})+(UA_{wall})-0.33Nv_a})$ is the overall lumped thermal resistance and (ρVC_p) is the lumped thermal capacitance.

If one substitutes back the values of P and Q, Equation 4.13 which predicts the interior temperature can be expressed as a first order transfer function below;

$$T_{in,pr}(t) = \frac{Q}{P} + [T_{in}(0) - \frac{Q}{P}]e^{(\frac{-t}{\zeta})} \tag{4.15}$$

CHAPTER 5

RESULTS AND DISCUSSIONS

This chapter presents the results as per study objectives (except that the first objective of obtaining the solution of a transient heat transfer function was presented in chapter 5). Appendix 1 presents ambient conditions (wind speed, relative humidity). Appendix 2 presents indoor temperature empirical results of the July 5th 2018 data set and they are called experimental results and abbreviated as T_{exp} for mathematical convenience. Appendix 3 presents the July 7th 2018 data set and they are called validating results (T_{expVal}) because they will be used for validation. On both days, the experiment was run for 24 hours. Appendix 4 (Traditional adobe mud hut code, Botswana Version 1) presents the MATLAB code for calculating/predicting the indoor temperature. The order of presentation of the results is;

- Objective 2: Model Development and calibration

  Development

  A MATLAB code was developed to iterate the output of the earlier presented transient heat transfer function. The initial values were taken from the experimental results to initialize the MATLAB solver and iterations were performed to obtain a set of predicted indoor temperature, abbreviated as T_{pre}.

Calibration

T_{pre} was fed into Regression Learner app (machine learning technique) in MATLAB to improve correlation by training our data using in-built regression learner models . The model with the least Root Mean Square Error (RMSE) was selected. The new set of temperature prediction, T_{preT}, (the T standing for "trained model") was obtained and further tested against T_{exp} to see if there has been any improvement on correlation. This was repeated until convergence (no further improvement on correlation).

- Objective 3: Model validation

  The trained model (T_{preT}) was validated against a different data set (T_{exp2}) of July 7th and the final correlation was obtained.

5.1 Objective 2: Model development and calibration

5.1.1 Model development

Three (3) sensors were used to record outdoor temperature and three (3) other sensors to record indoor temperature. Both outdoor and indoor temperatures were averaged and named T_{out} and T_{exp} respectively.

To determine the best Air Changes Per Hour's (ACH), a sensetivity analysis was performed by running the model at different values of ACHs as presented in Figure 5.1. The T_{pre} results were then correlated with T_{exp} and presented on Table 5.1. The ACH value that resembled the experimental results (T_{exp}) more closely in terms of pattern and correlation coefficient was selected and used for the determination of this study's model going forward. The best T_{pre} that resembled experimental results by pattern is T_{pre} at 2.5 ACH, and it also

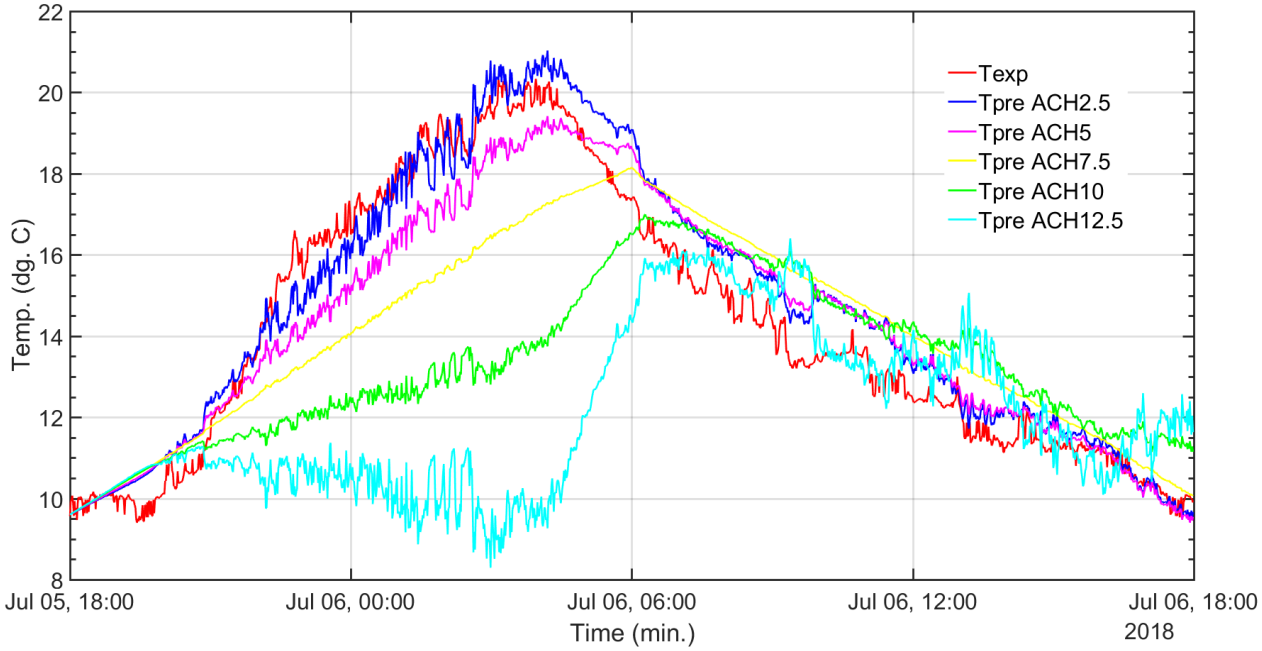


Figure 5.1: T_{exp}(in red), plotted with T_{pre} of different ACHs agaisnt time (24hrs) on July 5th.

gives the best correlation coefficient of 0.9768 (Table 5.1)

.

Table 5.1: R values of different ACHs in the sensetivity analysis

ACH	Correlation coef. (r)
2.5	0.9768
5	0.9459
7.5	0.8360
10	0.4777
12.5	-0.1063

5.1.1.1 Descriptive Statistics

Descriptive statistics show that the difference between the statistic parameters of T_{pre} and T_{exp} are all within 1°C as seen on Table 5.2. An excellent correlation is therefore expected between the two parameters.

Table 5.2: Descriptive statistics of T_{pre} and T_{exp}

Statistic parameter	T_{pre} (°C)	T_{exp} (°C)	Difference (°C)
Mean	14.7	14.2	-0.5
Std Dev.	3.3	3.2	-0.1
Min.	9.4 (0555hrs)	9.4 (0726 hrs)	0.0 (1hr 31m)
Max.	21.0 (1612hrs)	20.3 (1509 hrs)	-0.7 (-1hr 3m)
Range	11.6	10.9	-0.7

Table 5.3: Regressional statistics of T_{pre} and T_{exp}

Regression parameters	Value
P –value	0.0000
Correlation coef. (r)	0.9768
Regression coefs.	Intercept 0.0674
	Slope 0.9647
R Square (R^2)	0.954
RMSE	0.695
Observations	1440

5.1.1.2 Regression statistics

When a predictive model is developed, it should be tested against empirical data of the physical phenomenon for which it is predicting, to determine how accurately it predicts it. Predictive models are rarely 100% accurate because the regression line estimates the best line that passes through a data set. There is therefore bound to be uncertainty in regression, which is interpreted by error statistic tools and residuals. The correlation of T_{pre} against T_{exp} is presented and analysed statistically in this subsection.

The regression statistics are presented on Table 5.3. There are a total of 1440 observations. The P-value, at a 95% confidence level, is statistically significant because $P < 0.05$.

- Regression line

  The slope of 0.9647 (Table 5.3) of the regression line represents the rate of change in

T_{exp} as T_{pre} changes. In the case of this study, it will mean that; what the model predicts as a 1° C change, is actually 0.9647° C in reality (or as measured and denoted T_{exp}). At a difference of +0.0353° C (predictive model leading), this promises to be a reasonably good model.

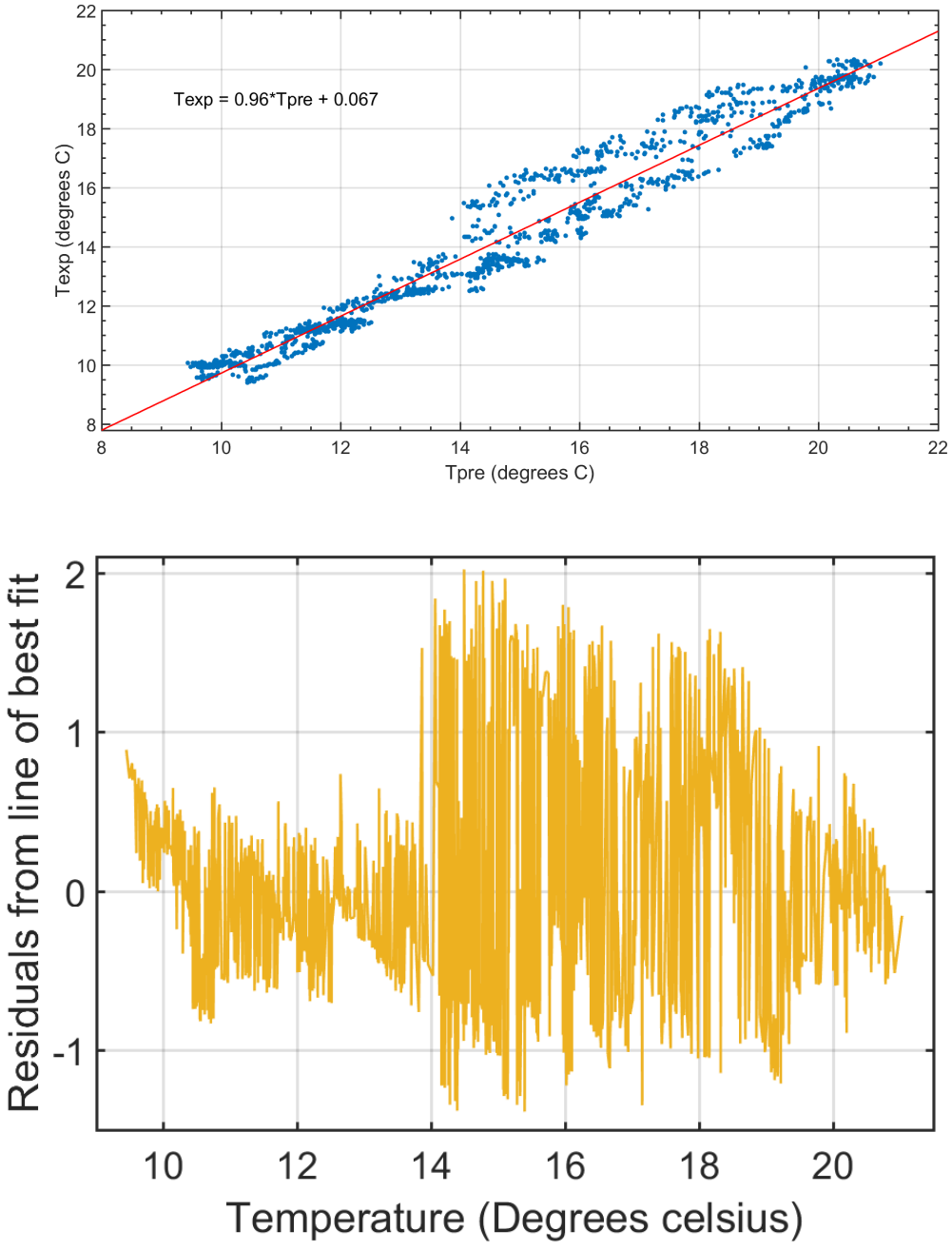


Figure 5.2: Scatter of T_{pre} and T_{exp} (top) and T_{pre} Residuals (bottom)

The intercept (0.0674) indicates that where T_{pre} is predicted by the model to be 0° C, it is actually 0.0674° C in reality (T_{exp}).

- Residuals

  The difference between the measured value (T_{exp}) and the predicted value (T_{pre}) of a regression model is the residual. Usually a good model has residuals scattered roughly symmetrically around 0. Residuals should not change significantly in size from left to right in the plot. Further to that, outliers should not occur, ie., residuals that are much larger than the rest of the residuals. Finally, a clear, nonlinear pattern should not appear in the residuals. The residual plot (Figure 5.2) shows a fairly random pattern with no systematic curvature and no major outliers. If there are some outliers towards either the far right or left, they may introduce an offset, tilting the regression line significantly in the direction of the outliers.

- Correlation coefficient

  Correlation describes the strength of association between T_{pre} and T_{exp}. It measures the strength and direction of a linear relationship between T_{pre} and T_{exp} on a scatter plot (Fig 5.2). The value of r is always between +1 and –1, where anything greater than +8 or less than -8 is strong correlation. When correlation coefficient (r) is greater than zero ($r > 0$), then there is a positive relationship, where r is equal to 1 ($r = 1$), there is a perfect relationship and when r is less than zero ($r < 0$), then there is a negative relationship. For zero ($r = 0$), then there is no relationship between the variables. In the case of this study, the correlation coefficient (r) is 0.98. This is indicative of a very strong and positive relationship between (T_{pre}) and T_{exp}. By interpretation, the

model predicts the indoor temperature accurately 98% of the times. The correlation coefficient can be improved by calibration.

- Coefficient of Determination (R^2)

  In linear regression models, R^2 is a relative goodness-of-fit measure. The closer the value is to 1, the better the relationship, between the two factors. In this study, R^2 measures the strength of the relationship between T_{exp} and T_{pre} model on a 0 – 100% scale. As per Table 5.3 , the model shows a very strong goodness of fit at 95%. Low residuals are expected because the higher the goodness of fit, the lower the residuals.

- Root Mean Square Error (RMSE)

  RMSE is an absolute measure of fit. It is the standard deviation of the residuals (prediction errors) which is a measure of how spread out the residuals are or how concentrated the data is around the line of best fit. The low RMSE value of 0.7°C indicates that the data is concentrated around the line of best fit.

5.1.2 Model Calibration

5.1.2.1 Regression Learner/Training

The major objectives of regression learning is to improve coefficient of correlation (r) and regression coefficients at the lowest statistic errors possible. This section will use MATLAB's regression learner module to improve the correlation of the predicted model relative to the experimental readings. That is achieved by adjusting the model parameters to get the closest representation of the experimental readings within boundaries of uncertainty.

The sol-air surface temperatures (T_{sol}) were fed in as predictors and the measured indoor temperature (T_{exp}) was taken as the true response to be learnt. After training multiple models, the errors were compared and the model with the least errors was selected as best, and used going forward.

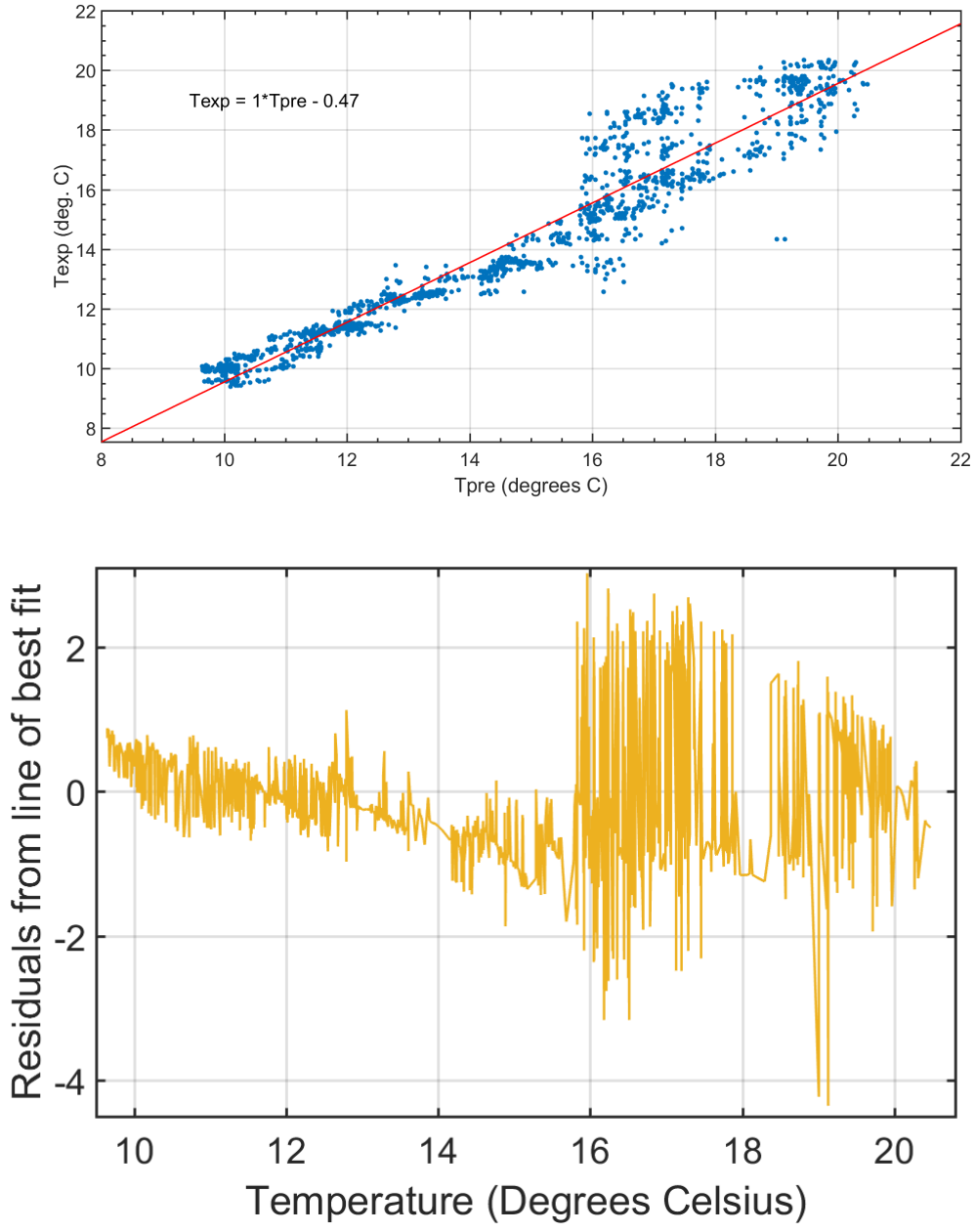


Figure 5.3: Scatter of T_{preT} and T_{exp} (top) and T_{pre} Residuals (bottom)

Table 5.4: Comparative regression statistics of T_{preT} and T_{pre}

Regression parameters	T_{pre}	T_{preT}	Change (%) or value
P –value	0.0000	0.0000	(0)
Correlation coef. (r)	0.9768	0.9768	(0)
Regression coefs.	Intercept 0.0674	-0.469	0.5364
	Slope 0.9647	1.0013	0.0366
R Square (R^2)	0.954	0.922	(-3.4%)
RMSE	0.695	0.906	(30.4%)
Observations	1440	1440	0

The specific type of cross validation selected in the regression learner was k-fold, performing 5 folds. Cross-validation is a technique used to protect against over-fitting in a predictive model by splitting data into training and test set. In cross-validation, the machine makes a fixed number of folds/partitions (5 in this case) of the data, runs the analysis on each fold, and then averages the overall error estimate. The regression errors of the predicted indoor temperature after training (now called T_{preT}), when compared to T_{pre} (this is predicted indoor temperature before training) is presented in Table 5.4.

After regression learning, as seen on Table 5.4, the (r) has remained the same, but the R^2 has dropped by 3.4%, which reduces the strength of the relationship between T_{exp} and T_{pre}. The RMSE has also increased by 30.3% to 0.9° C, which is undesirable.

The only factor that has improved is the slope. T_{pre} predicted an actual change of 1° C as 1.04° C, but now predicts it as 0.998° C. The new T_{preT} is only off by 0.002° C. The calibration exercise has improved the accuracy of the model insignificantly, while affecting of statistical error significantly (RMSE by 30% and R^2 by 3.4%. It can therefore be concluded that convergence is reached because accuracy can no longer be improved without adversely affecting statistical error.

5.1.2.2 Residuals

Despite a good cyclic pattern around the line of best fit, the residual plot (Figure 5 5) for the trained model shows a larger variance to the right than to the left. To the far right, the concentration of data points above the zero (0) line will introduce a bias and tilt the line of best fit towards the left. This will also introduce a systematic curvature. The range of variance (-4.3 to 3) is also worrisome as it gives a residual variance of 7.3° C. There are two (2) unreasonable outliers to the far right below the zero (0) line, which helps to slightly balance the systematic curvature from its leftwards bias. The model needs further fine tuning to reduce the residual patterns, and this can be done in further studies/research.

5.1.2.3 Hyper parameter tuning

Choosing a set of optimal hyper parameters that make the most significant contribution in learning an algorithm is done by enabling Principal Component Analysis (PCA) in the Regression Learner module of MATLAB. The PCA eliminates insignificant predictors and keeps just enough to explain 95% variance, avoiding over-fitting. The PCA selected the variables given in Table 5.5 in their given coefficient proportions. The three (3) variables are $T_{sol,wall}$, $T_{sol,thatch}$ and $T_{sol,door}$.

As seen on Table 5.6 the coefficients were then operated on by their total surface area (A) and their U-values (as given in Table 3.1) so that each may contribute at its proportion of thermal transmittance.

Table 5.5: Trained model coefficients

	$T_{sol,door}$	$T_{sol,thatch}$	$T_{sol,wall}$
PCA Coefficients (n)	0.8235	0.3205	0.4681

Table 5.6: Improvement of variable coefficients

	$T_{sol,door}$	$T_{sol,thatch}$	$T_{sol,wall}$
PCA Coefficients (n)	0.8235	0.3205	0.4681
U-values	0.94	0.54	1.39
Each U-value as a proportion of Total U-value (U)	0.3275	0.1882	0.4843
Surface areas	1.35	40	29.5
Each surface area as a proportion of total surface area (A)	0.0191	0.5646	0.4164
Final model coefficients ($U\times$A$\times$n)	0.1776	0.1020	0.2626

Total U-values = 2.87
Total surface area = 70.85 m^2

As derived on Table 5.6, the following model was deduced as the predictor of indoor temperature in an adobe mud hut during the day;

$$T_{preDay} = 0.18T_{sol,door} + 0.10T_{sol,thatch} + 0.26T_{sol,wall} - 3 \tag{5.1}$$

Where; T_{sol}, is the sol-air surface temperatures of the the door, the roof/thatch and the wall.

The day PCA model (6.1) is initialised to 9.6°C (the first value of T_{exp} at 0600hrs) by subtracting 3°C because that was the difference between 9.6°C and the first value (12.76371°C) of the PCA model.

$$T_{preNight} = 0.18T_{sol,door} + 0.10T_{sol,thatch} + 0.26T_{sol,wall} + 11.4 \tag{5.2}$$

The night PCA model (6.2) is initialised to 19°C (the first value of T_{exp} at 1800hrs) by adding 11.4°C because that was the difference between 19°C and the first value (7.683405°C) of the PCA model.

Since the solar irradiance was averaged over an assumed 12 hours of daylight, and there is no irradiance at night (from 1800hrs), the results of the model are expected to fall abruptly between 1759hrs and 1800hrs. This will not be representative of the true temperature response. The true response is that at sunset, the temperatures do not drop drastically within a minute, but drop uniformly as many universal surfaces would still have some heat. To mitigate the challenge, the model was initialised at 1800hrs by the temperature result of the previous time step (at 1759hrs), so that a smooth temperature transition from day to night is realised in spite of a fall in solar irradiation. The models were then split into day model (T_{preDay}) and night model ($T_{preNight}$) as presented above.

5.2 Objective 3: Model validation

To validate the final models (T_{preDay}) and ($T_{preNight}$), they were plotted and scattered against a data set (T_{expVal}) taken on July 7th 2018. The relationship between the two is statistically analysed differently at day and at night. A conclusion was then drawn on the statistical effectiveness of the models to estimate indoor temperature over time.

The temperature against time plots are shown in Figure 5.4 for the day and Figure 5.6 for the night. The validation regressional statistics are shown in Table 5.7.

Table 5.7: Validation Regressional statistics

Regression parameters	For T_{preDay}	For $T_{preNight}$
P –value	0	0.0000
Correlation coef. (r)	0.9336	0.8940
Regression coefs.	Intercept 7.9804	1.4069
	Slope 0.4910	0.6782
R Square (R^2)	0.8716	0.7992
RMSE	0.5036	0.3900
Observations	720	720

5.2.1 Day model (T_{preDay})

For the day, the model (T_{preDay}) shows a pattern that is more cyclic than the actual (T_{expVal}). The temperature difference between the actual and the model is within the range of +-3°C all day. As seen on Table 5.7, the r for the day is 0.93, which is a very strong correlation. The RMSE is 0.5°C, which is acceptable as it is on the lower end. The low RMSE is also a good indication that the residual variances will be low, indicating that the data points are concentrated around the line of best fit. The R-squared value for the day is 87%, which is a fairly strong goodness of fit, as similarly shown by the scatter plot in Figure 5.5. At a slope of 0.49, it means the model predicts a 1°C change as 2°C change.

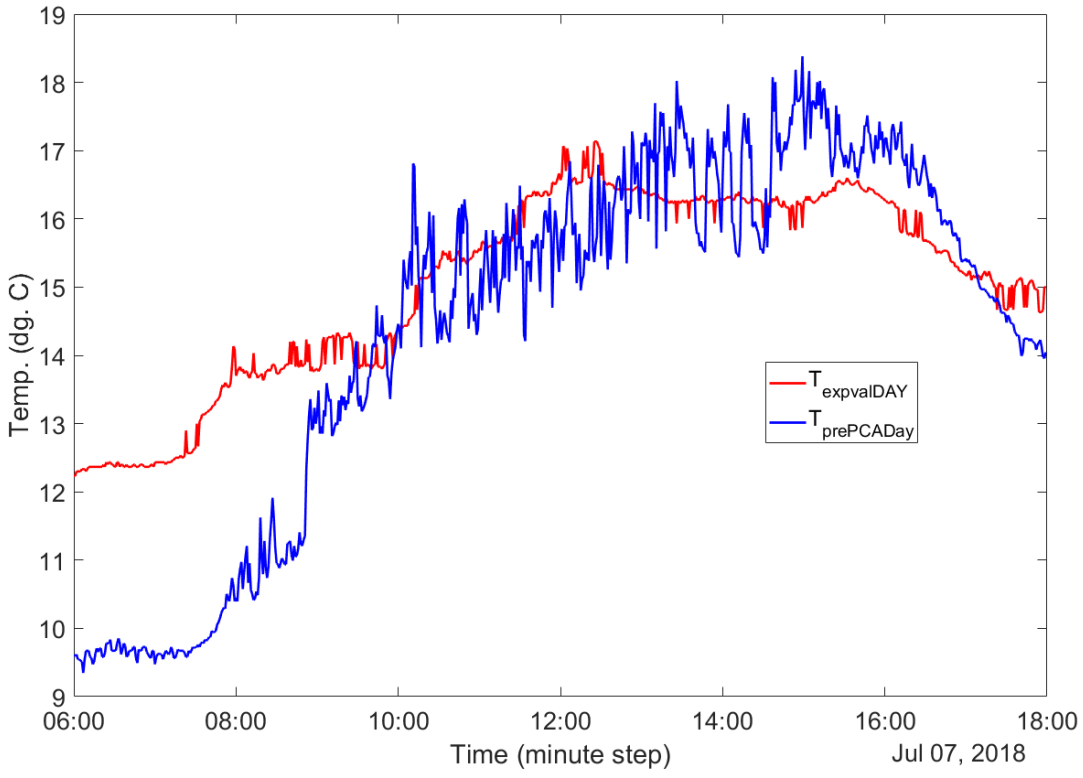


Figure 5.4: Day of July 7th $T_{expvalDAY}$ vs T_{preDay}

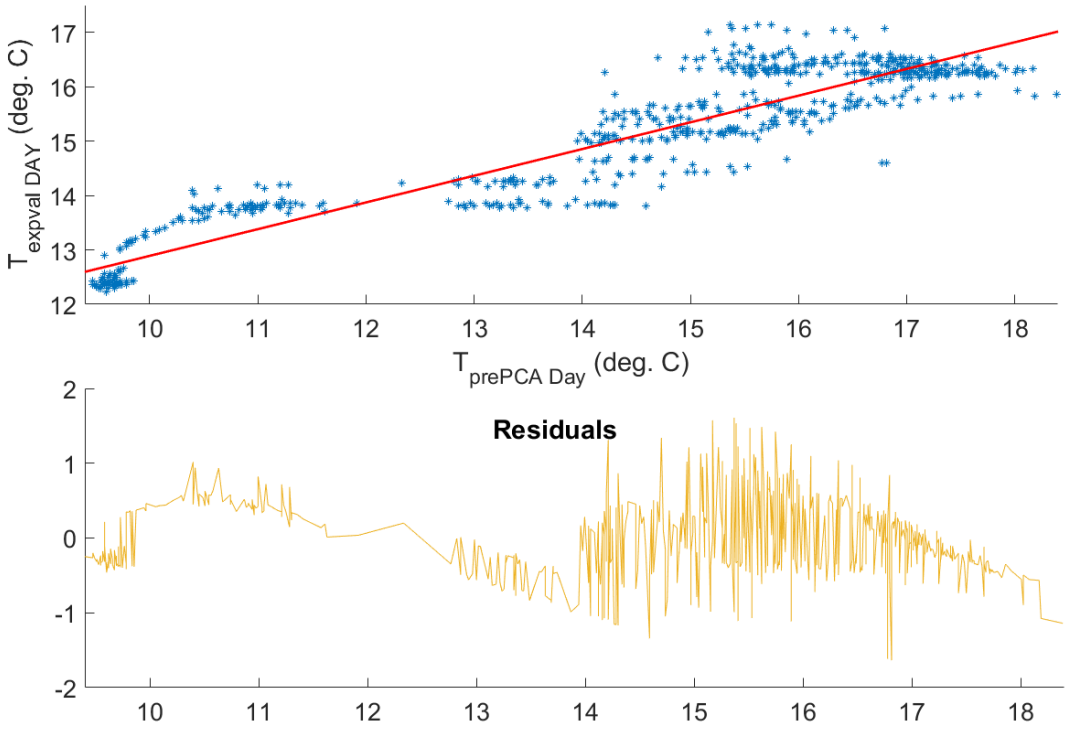


Figure 5.5: Scatter (top) and residuals (bottom) of day of July 7th $T_{expvalDAY}$ vs T_{preDay}

.

Despite a low (which is very good) range in the y-axis (-2 to 2), the day residual plot (Figure 5.5) tends to be more cyclic about the line of best fit on the right than on the left. There is also a larger residual variance on the right than on the left. The said variance is also evident on the scatter plot. While there are no worrisome outliers, the discussed residual pattern has definitely introduced some bias to the line of best fit and the model needs further refining.

5.2.2 Night model ($T_{preNight}$)

At night, the actual ($T_{expvalNight}$) is more cyclic than its day counterpart, which has changed from cyclic pattern to an almost smooth line, albeit with very small noise (Fig

5.6). This lack of noise at night, for both graphs, may be attributed to the absence of solar irradiance and its fluctuations at night. The r for the night is 0.89. The R-squared for the night gives a fairly strong goodness of fit at 80%. At a slope of 0.678, it means the model predicts a 1°C change as a 1.5°C change.

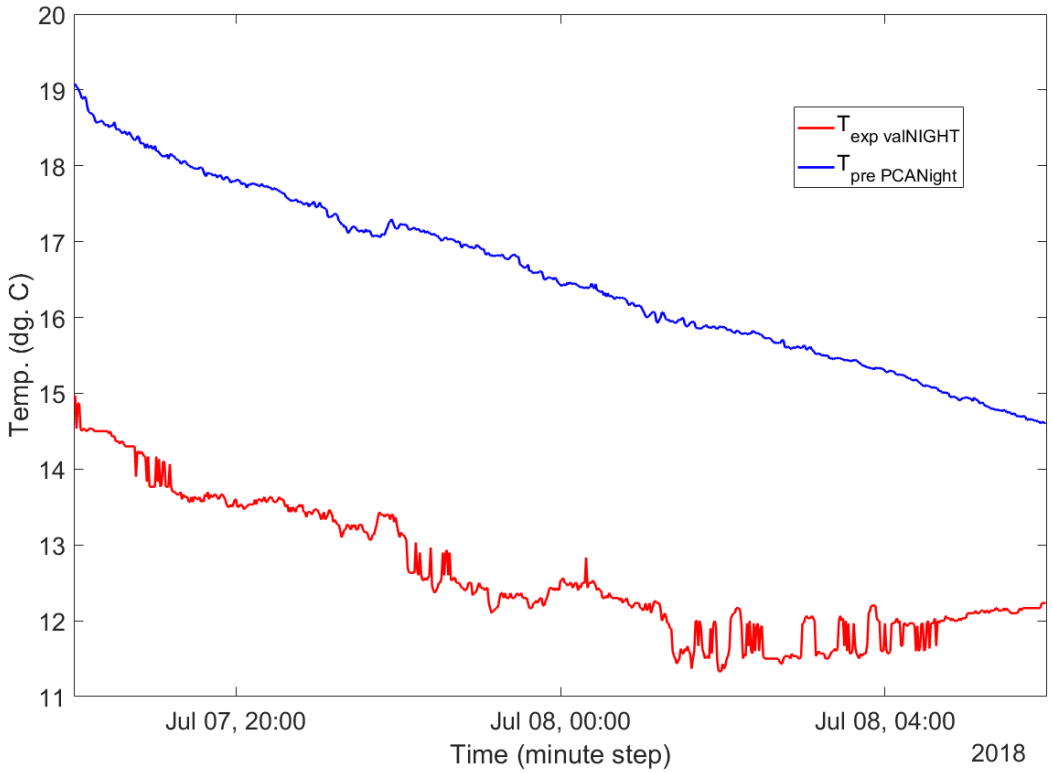


Figure 5.6: Night of July 7th $T_{expvalNIGHT}$ vs $T_{preNight}$

.

In the night residual plot (Figure 5.7), the points are close to the line of best fit by a range of -0.9 to 0.9, which is very impressive. Below the line of best fit, there is heavy concentration of data points, which manifests as a systematic curvature on the residual plot. To the right, the residual plot shows a cyclic pattern above the line of best fit, with a very small variation compared to the left. The line of best fit is therefore unfairly tilted downwards on the left and needs further refining.

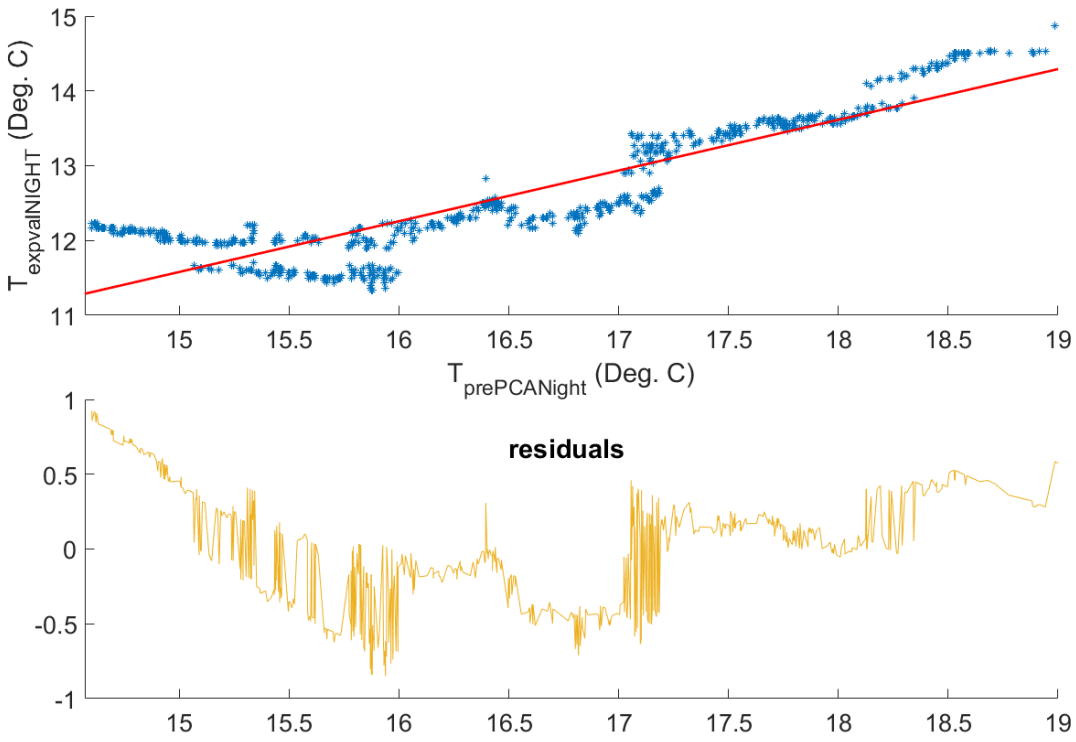


Figure 5.7: Scatter (top) and residuals (bottom) of night of July 7th $T_{expvalNIGHT}$ vs $T_{preNight}$

.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

This chapter concludes the study by assessing whether the study objectives were met. The conclusion will follow the order of the study objectives thus;

- Objective 1: Obtaining the solution of a transient heat transfer function.
- Objective 2: Development and calibration of an indoor temperature prediction model.
- Objective 3: Validation of the model with a different test set

6.1 Transient heat transfer function

Objective 1 was achieved as Fourier's law of heat conduction was used to work from first principles to obtain a transient first order transfer function which was presented in Chapter 4 as (Eq.4.15).

6.2 Model development and calibration

The holistic heat transfer phenomena of the adobe study hut and the numerical fine tuning (by Regression Learner) were combined in the development and calibration of the models below;

$$T_{preDay} = 0.18T_{sol,door} + 0.10T_{sol,thatch} + 0.26T_{sol,wall} - 3 \tag{6.1}$$

$$T_{preNight} = 0.18T_{sol,door} + 0.10T_{sol,thatch} + 0.26T_{sol,wall} + 11.4 \tag{6.2}$$

T_{pre} predicted an actual change of 1° C as 1.04° C, but now predicts it as 0.998° C. The new T_{preDay} and $T_{prenight}$ are only off by 0.002° C. This was before the model was split into its day and night modules. The models are correct within an error (RMSE) of +-0.5°C (Table 5.7) and within the prevailing conditions of July 5th 2018 (Appendix 1 (a)).

6.3 Validation of the model

The models presented in this study are reliable to a very good degree as per the validation statistical analysis. At a 95% variance level, the day and night models predict indoor temperature at an excellent strength of association of $r = 0.9$, and an impressive low RMSE average of 0.45°C. The average R-squared value is 84%, which is a fairly good and acceptable goodness of fit.

6.4 Model limitations

It would be unfair to compare the results/performance of this model to the existing models of Ogoli, Givoni, Ponni and Baskar which were in test chambers, while this one was life size. The existing models were not specifically for an adobe thatch hut like this study. The existing models and this model have very different thermal dynamics due to the different materials used. This model is quite novel as it uses sol-air temperature as opposed to the existing models which use surface temperature.

This model was developed specifically for the hot and dry climate of Botswana, for an adobe mud hut. Its accuracy can therefore not be ascertained for other climates. However, the approach of development makes it easy to have it adapted for different climatic conditions and construction materials by editing the code accordingly. The model is based on a 24 hour cycle on July 5th, within the prevailing weather conditions of the day. It has not been tested and validated for accuracy in long term performance. This model should be tested in other climatic conditions, and over longer time periods.

6.5 Recommendations

The accuracy of the model can be improved further by using surface air temperatures instead of this study's use of sol-air temperature. The statistical analysis of this model shows impressive values, however, the presence of residual patterns in this model is an indication that further fine-tuning is needed to de-trend the patterns to improve the accuracy of the model. Further to refining of the model, further studies can be done by taking longer experiments, e.g over a month or over 6 months.

REFERENCES

[1] Madhumathi A, Vishnupriya J and Vignesh S 2014 Sustainability of traditional rural mud houses in Tamilnadu, India: An analysis related to thermal comfort J. Multidiscip. Eng. Sci. Technol. 1 3159–40

[2] Gunnell K 2009 Green Building in South Africa : Emerging Trends

[3] Olukoya O P 2015 Energy Efficiency in Traditional Buildings: the Louroujina, North Cyprus Case (Cyprus International University)

[4] Opaluwa E, Obi P and O.Osasona C 2012 Sustainability in traditional African architecture: a springboard for sustainable urban cities 97–105

[5] Meir I A and Roaf S C 2003 The future of the vernacular Towards new methodologies Vernacular architecture in the twenty-first century: Theory, education and practice. ed M Aquith, L Vellinga (Oxon: Taylor Francis) pp 215–30

[6] Morton T, Stevenson F, Taylor B and Smith C 2005 Low cost earth brick construction: Monitoring and evaluation.

[7] Taylor P and Luther M B 2004 Evaluating rammed earth walls: a case study Sol Energy 76 79–84

[8] Binici H, Aksogan O, Bodur N, Akca E and Kapur S 2007 Thermal isolation and mechanical properties of fiber reinforced mud bricks as wall materials Constr Build Mater 21 901–6.

[9] Binici H, Aksogan O, Bodur N M, Akca E and Kapur S 2005 Investigation of fiber reinforced mud brick as a building material Constr Build Mater 19 313–8

[10] Binici H, Aksogan O, Bakbak D, Kaplan H and Isik B 2009 Sound insulation of fibre reinforced mud brick walls Constr. Build Mater 23 1035–41.

[11] Revuelta-Acosta, J D Garcia-Diaz A, Soto-Zarazua G M and Rico-Garcia E 2010 Adobe as a sustainable material: a thermal performance J Appl Sci 10 2211–6.

[12] John G, Derek C C and George J 2005 Sustainable building solutions: a review of lessons from the natural world J. Appl. Sci. 40 319–28.

[13] Christoforou E, Kylili A, Fokaides P A and Ioannou I 2016 Cradle to site Life Cycle Assessment (LCA) of adobe bricks J. Clean. Prod. 112 443–52

[14] Turanli L and Erdogan T Y 1996 Improving the mechanical properties of adobe blocks used in low-cost rural housing. In: XXIVth IAHS World Housing Congress, Ankara, Turkey. XXIVth IAHS World Housing Congress (Ankara, Turkey)

[15] Shittu T 2008 Earth construction in Nigeria: challenges and prospects 5th International conference on building with earth – LEHM (Weimar, Germany) p 41–7.

[16] Zami M S and Lee A 2010 Stabilised or unstabilised earth construction for contemporary urban housing? 5th Int. Conf. Responsive Manuf. - Green Manuf. (ICRM 2010) 227–40

[17] Little B and Morton T 2001 Building with earth in Scotland: Innovative design and sustainability

[18] Heathcote K A 1995 Durability of earthwall buildings Constr. Build. Mater. 9 185–9

[19] Ogunye F O and Boussabaine H 2002 Diagnosis of assessment methods for weatherability of stabilised compressed soil blocks Constr. Build. Mater. 16 163–72

[20] Pacheco-Torgal F and Jalali S 2012 Earth construction: Lessons from the past for future eco-efficient construction Constr. Build. Mater. 29 512–9

[21] Makinde O O 2012 Ecological and Sustainability Issues in Earth Construction J. Environ. Sci. Toxicol. Food Technol. 1 20–8

[22] Elias-ozkan S T, Summers F and Surmeli N 2006 A Comparative Study of the Thermal Performance of Building Materials 6–8

[23] Aubert J E, Fabbri A, Morel J C and Maillard P 2013 An earth block with a compressive strength higher than 45 MPa! Constr. Build. Mater. 47 366–9

[24] Morel J C, Pkla A and Walker P 2007 Compressive strength testing of compressed earth blocks Constr. Build. Mater. 21 303–9

[25] Jaquin P A, Augarde C E, Gallipoli D and Toll D G 2009 The strength of unstabilised rammed earth materials Géotechnique 59 487–90

[26] Illampas R, Ioannou I and Charmpis D C 2014 Adobe bricks under compression: Experimental investigation and derivation of stress-strain equation Constr. Build. Mater. 53

[27] Vilane B R T 2010 Assessment of stabilisation of adobes by confined compression tests Biosyst. Eng. 106 551–8

[28] Binici H, Aksogan O and Shah T 2005 Investigation of fibre reinforced mud brick as a building material Constr. Build. Mater. 19 313–8

[29] Mishra S 2017 Thermal Performance Evaluation of Mud House for Ghaziabad Composite Climate 8 45–55

[30] Fay R, Treloar G and Iyer-Raniga U 2000 Life-cycle energy analysis of buildings: a case study Build. Res. Inf. 28 31–41

[31] Nishimura K, Hondo H and Uchiyama Y 1996 Derivation of energy-embodiment functions to estimate the embodied energy from the material content Energy 21 1247–56

[32] Mithraratne N and Vale B 2004 Life cycle analysis model for New Zealand houses Build. Environ. 39 483–92

[33] Thormark C 2006 The effect of material choice on the total energy need and recycling potential of a building Build. Environ. 41 1019–26

[34] Gonzalez M and Navarro J 2006 Assessment of the decrease of CO2 emissions in the construction field through the selection of materials Build. Environ. 41 902–9

[35] Venkatarama Reddy B V. and Prasanna Kumar P 2010 Embodied energy in cement stabilised rammed earth walls Energy Build. 42 380–5

[36] Lourenço P I 2002 Earth constructions. Masters thesis, (Universitdade Tecnica de Lisboa, Lisbon, Portugal)

[37] Chel A and Tiwari G N 2009 Thermal performance and embodied energy analysis of a passive house - Case study of vault roof mud-house in India Appl. Energy 86 1956–69

[38] Easton D 1996 The Rammed Earth House (Chelsea Green Publishing United States)

[39] Shukla A, Tiwari G N and Sodha M S 2009 Embodied energy analysis of adobe house Renew. Energy 34 755–61

[40] Lyamuya P K and Alam K N 2013 Earth Construction in Botswana: Reviving and Improving the Tradition 20th General Assembly and Conference (Dhaka, Senegal) pp 1–13

[41] Kabaija S E A 2007 Energy Statistics 2003 (Gaborone, Botswana)

[42] McHenry P G 1984 Adobe and rammed earth buildings (New York: Wiley)

[43] Hall M and Djerbib Y 2004 Rammed earth sample production: Context, recommendations and consistency Constr. Build. Mater. 18 281–6

[44] Kemp B 1999 Soil (Including mud-brick architecture) Ancient Egyptian Materials and Technology ed P T Nicholsoon and I Shaw (Cambridge University Press) pp 79–103

[45] Atzeni C, Pia G, Sanna U and Spanu N 2008 A fractal model of the porous microstructure of earth-based materials Constr. Build. Mater. 22 1607–13

[46] Rodríguez M A and Saroza B 2006 Determination of the optimum composition of adobe brick for a school in Cuba Identificación de la composición óptima del adobe como material de construcción de una escuela en Cuba Mater. Constr. 56 53–62

[47] Parra-Saldivar M L and Batty W 2006 Thermal behaviour of adobe constructions Build. Environ. 41 1892–904

[48] Dethier J 1986 Des Architectures de Terre Edition de Centre Pompidou (Paris)

[49] Coffman R, Agnew N, Austin G and Doehne E 1990 Adobe mineralogy: characterization of adobes from around the world 6th Int. Conf. Conserv. Earthen Archit. Las Cruces, New Mex. U.S.A., Oct. 14-19, 1990 1 424–9

[50] Alva B A The conservation of earthen architecture Getty Conserv. Inst. Newsl.

[51] Sharma V, Marwaha B M and Vinayak H K 2016 Enhancing durability of adobe by natural reinforcement for propagating sustainable mud housing Int. J. Sustain. Built Environ. 5 141–55

[52] Singh L D and Singh S C S 2007 Final Report On Low Cost Housing Using Stabilised Mud Blocks (New Delhi, India)

[53] Delgado M C J and Guerrero I C 2006 Earth building in Spain Constr. Build. Mater. 20 679–90

[54] Guillaud H and Houben H 1994 Earth construction: A comprehensive guide. (USA: Interediate Technology Publications. University of Michigan)

[55] Larsson A and Larsson V 1984 Traditional Tswana Housing: A Study in Four Villages in Eastern Botswana 1984 Document of Swedish Council for Building Research (Swedish Council for Building Research)

[56] Virkkala I, Johnson T, Architects R + K, Foundation C D, Architecture B S of and Shelter K 2009 Building with Earth

[57] El Pueblito Estates I 1997 Adobe History http://www.adobemfg.com/el-pueblito-estates/adobe

[58] Rael R 2009 Earth Architecture (New York: Princeton Architectural Press.)

[59] Turanli L and Saritas A 2011 Strengthening the structural behavior of adobe walls through the use of plaster reinforcement mesh Constr. Build. Mater. 25 1747–52

[60] Ozbek H, Kapur S and Dinc U 1994 The soil map of the area of North Adana (Adana, Turkey: The University of Cukurova)

[61] Hart K (Hartworks L 2001 Greenhomebuilding http://greenhomebuilding.com/

[62] Pierre Roux P and Alexander A (Anyway S 2009 SUSTAINABLE BUILDING MATERIALS Sustainable Neighbourhood Design Manual: A Non-Technical Guide. Final Draft for Comment. Funded by the National Department of Housing and Cordaid. ed L Thompson-Smeddle pp 29–45

[63] Jaquin P A 2008 Analysis of historic rammed earth construction. PhD thesis. (Durham University)

[64] Niroumand H, Zain M F M and Jamil M 2013 Assessing of Critical Parametrs on Earth Architecture and Earth Buildings as a Vernacular and Sustainable Architecture in Various Countries Procedia - Soc. Behav. Sci. 89 248–60

[65] Schroeder H, Volhard F, Rohlen U and Ziegert C 2008 The "LehmbauRegeln" in 2008 – a review after 10 years of use in practice Proceedings of the 5th international conference on building with earth – LEHM 2008 (Weimar,Germany) pp 13–21

[66] Schroeder H, Rohlen U and Jorchel S 2008 Education and vocational training in building with earth in Germany Proceedings of the 5th International conference on building with earth – LEHM (Weimar,Germany) pp 193–7

[67] Maniatidis V and Walker P 2003 A review of rammed earth construction Dev. rammed earth UK Hous. 109

[68] MacDougall C 2008 Natural building materials in mainstream construction: lessons from the UK Green Build. J. 3 3–14

[69] Martín S, Mazarrón F R and Cañas I 2010 Study of thermal environment inside rural houses of Navapalos (Spain): The advantages of reuse buildings of high thermal inertia Constr. Build. Mater. 24 666–76

[70] Morton T 2008 Earth masonry – design and construction guidelines (HIS BRE Press)

[71] Larson A 1988 From Outdoor to Indoor Living: the transition from traditional to modern low-cost housing in Botswana (Lund, Sweden.: University of Lund)

[72] Ngowi A B 1997 Improving the traditional earth construction: a case study of Botswana Constr. Build. Mater. 11 1–7

[73] Olukoya Obafemi A P and Kurt S 2016 Environmental impacts of adobe as a building material: The north cyprus traditional building case Case Stud. Constr. Mater. 4 32–41

[74] Fisher D E, Ph D, Pedersen C O and Ph D 1997 Convective Heat Transfer in Building Energy and Thermal Load Calculations 103

[75] Makaka G and Meyer E 2006 Temperature stability of traditional and low-cost modern housing in the Eastern Cape, South Africa J. Build. Phys. 30 71–86

[76] Santamouris M and Asimakopoulos D 1996 Passive cooling of buildings

[77] Del Barrio E P and Guyon G 2003 Theoretical basis for empirical model validation using parameters space analysis tools Energy Build. 35 985–96

[78] Heating A I of R A C and 2000 Technical handbook / the Australian Institute of Refrigeration, Air Conditioning and Heating (Melbourne, Australia: AIRAH)

[79] Vivancos J L, Soto J, Perez I, Ros-Lis J V. and Martínez-Máñez R 2009 A new model based on experimental results for the thermal characterization of bricks Build. Environ. 44 1047–52

[80] Goodhew S and Griffiths R 2005 Sustainable earth walls to meet the building regulations Energy Build. 37 451–9

[81] Adam E A and Jones P J 1995 Thermophysical properties of stabilised soil building blocks Build. Environ. 30 245–53

[82] Yokobayashi S and Sato M 2007 A Study on the Heat and Moisture Properties of " Tsuchikabe " – A Specialty of Hyogo Prefecture by 1–4

[83] Ajibola K and Onabanjo B O 1995 Investigation of Cocos nucifera as a potential insulator for buildings Renew. Energy 6 81–4

[84] Alausa S K, Adekoya B J and Aderibigbe J O 2013 Thermal Characteristics of laterite mud and concrete block for walls in building construction in Nigeria Int. J. Eng. Appl. Sci. 4 1–4

[85] Etuk S E, Akpabio L E and Akpabio K E 2005 Determination of Thermal Properties of Cocos Nucifera Trunk for Predicting Temperature Variation with its Thickness Arab. J. Sci. Eng. Vol. 30, Number 1A 30 121–6

[86] Dili A S, Naseer M A and Varghese T Z 2010 Passive environment control system of Kerala vernacular residential architecture for a comfortable indoor environment: A qualitative and quantitative analyses Energy Build. 42 917–27

[87] Yoshino H, Hasegawa K and Matsumoto S 2007 Passive cooling effect of traditional Japanese building's features Manag. Environ. Qual. An Int. J. 18 578–90

[88] Givoni B and Katz L 1985 Earth temperatures and underground buildings Energy Build. 8 15–25

[89] Vandermeer W J and Bickle L W 1978 Effective U value: A new method for predicting average energy consumption for heating buildings (New Mexico)

[90] Rees S W, Zhou Z and Thomas H R 2001 Influence of soil moisture content variations on heat losses from earth-contact structures: An initial assessment Build. Environ. 36 157–65

[91] Malama A and Sharples S Sensitivity Analysis of a Traditional Round Hut in the Tropical Upland Climate

[92] Koenigsberger O H, Ingersoll T G, Mayhew A and Szokolay S V 1975 Manual of Tropical Housing and Building-Climatic Design

[93] Basharat J and Ahmad M J 2002 Thermal performance of dome shaped adobe house-Case study for moderate climatic zone of India Int. J. Eng. Eng. Res. Appl. 1 1075–81

[94] Pearlmutter A 1993 Roof geometry as a determinant of thermal behavior: a comparative study of vaulted and flat surface in a hot-arid zone Archit. Sci 36 75–86

[95] Almeida G L P de, Pandorfi H, Baptista F, Guiselini C and Barnabé J M C 2016 Thermal efficiency of individual shelters for girolando calves in brazilian semi-arid regions Eng. Agrícola 36 13–23

[96] Kalu P N, Agbo P E and Nwofe P A 2015 Thermal Comfort Analysis of Different Roofing Materials Asian J. Appl. Sci. 03 2321–893

[97] Doulos L, Santamouris M and Livada I 2004 Passive cooling of outdoor urban spaces. The role of materials Sol. Energy 77 231–49

[98] Sharma V, Vinayak H K and Marwaha B M 2015 Enhancing compressive strength of soil using natural fibers Constr. Build. Mater. 93 943–9

[99] Ashour T, Georg H and Wu W 2011 Performance of straw bale wall: A case of study Energy Build. 43 1960–7

[100] Khosrow G, Romildo D, Toledo F, Normando P and Barbosa 1999 Behavior of composite soil reinforced with natural fibers Cem Concr Compos 21 39–48

[101] Ramírez R A, García P M, Jacob, Juárez D C A and Gochi Y 2012 The use of sugarcane bagasse ash and lime to improve the durability Constr Build Mater 34 296–305

[102] Galán-Marín C, Rivera-Gómez C and Petric J 2010 Clay-based composite stabilized with natural polymer and fibre Constr. Build. Mater. 24 1462–8

[103] Binici H, Aksogan O, Bodur M N, Akca E and Kapur S 2007 Thermal isolation and mechanical properties of fibre reinforced mud bricks as wall materials Constr. Build. Mater. 21 901–6

[104] Bahobail M A 2012 The Mud Additives and their Effect on Thermal Conductivity of Adobe Bricks J. Eng. Sci. Assiut Univ. 40 21–34

[105] Berhane Z 1990 “the Traditional use of Millet (‘teff’) Stalk as Reinforcement for Clayey Building Materials”, Vegetable Plants and their fibers as Building materials Proceeding of the second International RILEM Symposium

[106] Abdu M A 2010 Developing A Modern Technique for Clayey Construction Conference on: Technology Sustainability in the Built Environment, College of Arch. Planning, King Saud University (Riyadh)

[107] Giamundo V, Lignola G P, Prota A and Manfredi G 2014 Nonlinear analyses of adobe masonry walls reinforced with fiberglass mesh Polymers (Basel). 6 464–78

[108] Varum H, Costa A, Fonseca J and Furtado A 2015 Behaviour Characterization and Rehabilitation of Adobe Construction Procedia Eng. 114 714–21

[109] Angulo-Ibáñez Q, Mas-Tomás Á, Galvañ-Llopis V and Sántolaria-Montesinos J L 2012 Traditional braces of earth constructions Constr. Build. Mater. 30 389–99

[110] De Dear R J and Brager G S 2002 Thermal comfort in naturally ventilated buildings: Revisions to ASHRAE Standard 55 Energy Build. 34 549–61

[111] Ogoli D M 2003 Predicting indoor temperatures in closed buildings with high thermal mass Energy Build. 35 851–62

[112] Givoni B 2001 Personal Discussions with David Mwale Ogoli during the Passive and Low Energy Architecture (PLEA 2000) Conference

[113] Ponni M R and Baskar 2008 Evaluation of Indoor Temperature through Roof and Wall Temperatures -An Experimental Study in Hot and Humid Climate Certif. Int. J. Eng. Innov. Technol. 9001 2277–3754

[114] CIBSE 1999 Environmental Design CIBSE, A Guide

[115] Szokolay S V. 2004 Introduction to architectural science: the basis of sustainable design, in: Data Sheet 1.1 Thermal Properties of Materials (Oxford, UK: Architectural Press/Elsevier)

[116] Botswana Power Corporation 2018 Power Tariffs https://www.bpc.bw/customer-service/tariffs Tariffs

[117] Cofirman R, Agnew N and Auiston G Adobe mineralogy characterization of adobes from around the world Proceedings of 6th international conference on the conservation of earthen architecture (Las Cruces, NM,)

[118] Janczura J, Maciejewska M, Szczurek A and Wyłomańska A 2013 Stochastic Modeling of Indoor Air Temperature J. Stat. Phys. 152 979–94

[119] Fanger P O 1970 Thermal comfort, analysis and application in environmental engineering (Copenhagen: Danish Technical Press)

[120] Centre) A (African R C Climatology Period: 2001 - 2010 SSKIA Station

[121] Counciil G C Gaborone Climate

APPENDICES

Appendix 1(a): Ambient conditions of July 5th 2018

Time	RH* (%)	Temp.** (\deg. C)	SR*** (Wm^2)	WS**** (m/s)
0730 AM	38.0	17.4	1.0	0.0
0900 AM	37.4	17.3	603.0	1.1
1000 AM	35.9	19.7	690.0	1.4
1100 AM	36.5	19.9	730.0	2.5
1200 NOON	33.9	21.6	238.0	4.2
1300 PM	31.9	23.5	682.0	1.8
1400 PM	29.9	23.0	495.0	2.4
1500 PM	293.0	23.8	491.0	1.3
1600 PM	29.3	23.3	258.0	1.7
1700 PM	32.3	19.3	1.0	1.5
1800 PM	31.9	19.8	0.0	0.0

Appendix 1(b): Ambient conditions of July 7th 2018

Time	RH* (%)	Temp.** (\deg. C)	SR*** (Wm^2)	WS**** (m/s)
0900 AM	58.2	18.7	183.0	1.5
1000 AM	70.3	14.5	47.0	1.0
1100 AM	72.5	14.0	87.0	0.7
1200 NOON	62.8	15.3	109.0	0.6
1300 PM	59.6	16.4	21.0	0.7
1400 PM	60.0	15.9	27.0	2.8
1500 PM	60.0	16.0	16.0	1.7

*Relative Humidity (RH) **Temperature (Temp.)

***Solar Radiation (SR) ****Wind Speed (WS)

Appendix 2: Indoor and Outdoor temperatures of July 5th 2018 (T_{exp} in °C)

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:00:00 AM	7.8	8.5	10.0	8.8	9.0	9.8	9.9	9.6
6:01:00 AM	7.9	8.4	10.0	8.8	10.0	9.8	10.0	9.9
6:02:00 AM	7.9	8.5	10.0	8.8	10.0	9.9	10.0	10.0
6:03:00 AM	7.8	8.4	9.8	8.7	10.0	10.1	10.1	10.1
6:04:00 AM	7.8	8.3	9.9	8.7	10.0	9.8	9.9	9.9
6:05:00 AM	7.7	8.3	9.9	8.6	9.0	9.8	9.9	9.6
6:06:00 AM	7.7	8.2	9.9	8.6	10.0	9.9	9.9	9.9
6:07:00 AM	7.4	8.0	9.5	8.3	9.0	9.9	9.9	9.6
6:08:00 AM	7.8	8.3	9.9	8.7	10.0	9.6	9.7	9.8
6:09:00 AM	8.0	8.6	10.1	8.9	9.0	9.7	9.7	9.5
6:10:00 AM	8.0	8.6	10.1	8.9	10.0	9.8	9.9	9.9
6:11:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
6:12:00 AM	7.9	8.4	9.9	8.7	10.0	9.9	10.0	10.0
6:13:00 AM	7.8	8.4	9.9	8.7	10.0	10.0	10.1	10.0
6:14:00 AM	7.7	8.2	9.7	8.5	10.0	10.0	10.1	10.0
6:15:00 AM	7.7	8.3	9.8	8.6	10.0	10.0	10.0	10.0
6:16:00 AM	8.0	8.5	10.0	8.8	10.0	9.8	9.9	9.9
6:17:00 AM	8.1	8.7	10.1	9.0	9.0	9.8	9.9	9.6
6:18:00 AM	8.0	8.5	10.1	8.9	10.0	9.8	9.9	9.9
6:19:00 AM	8.0	8.7	10.2	9.0	9.0	9.9	10.0	9.6
6:20:00 AM	8.1	8.6	10.2	9.0	10.0	9.9	10.0	10.0
6:21:00 AM	7.9	8.4	9.9	8.7	10.0	9.8	9.9	9.9
6:22:00 AM	7.9	8.4	9.9	8.7	9.0	9.9	10.0	9.6
6:23:00 AM	8.0	8.5	10.0	8.8	10.0	9.9	10.0	10.0
6:24:00 AM	8.2	8.8	10.3	9.1	9.0	10.0	10.0	9.7

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:25:00 AM	8.2	8.8	10.3	9.1	10.0	9.9	10.0	10.0
6:26:00 AM	8.2	8.8	10.3	9.1	10.0	10.0	10.1	10.0
6:27:00 AM	8.3	8.9	10.4	9.2	10.0	10.1	10.2	10.1
6:28:00 AM	8.0	8.6	10.1	8.9	10.0	10.1	10.1	10.1
6:29:00 AM	8.0	8.6	10.1	8.9	10.0	10.1	10.2	10.1
6:30:00 AM	8.0	8.6	10.1	8.9	10.0	10.2	10.3	10.2
6:31:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
6:32:00 AM	8.2	8.8	10.3	9.1	10.0	10.1	10.2	10.1
6:33:00 AM	8.4	8.9	10.4	9.2	9.0	10.1	10.1	9.7
6:34:00 AM	8.2	8.8	10.3	9.1	10.0	10.1	10.1	10.1
6:35:00 AM	8.0	8.4	10.0	8.8	10.0	9.9	10.1	10.0
6:36:00 AM	8.1	8.6	10.1	8.9	10.0	9.9	10.0	10.0
6:37:00 AM	8.2	8.8	10.3	9.1	10.0	9.9	10.0	10.0
6:38:00 AM	8.2	8.7	10.2	9.0	10.0	10.0	10.1	10.0
6:39:00 AM	7.8	8.4	10.0	8.7	10.0	10.1	10.2	10.1
6:40:00 AM	7.9	8.4	10.0	8.8	10.0	10.1	10.0	10.0
6:41:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
6:42:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
6:43:00 AM	8.0	8.6	10.1	8.9	10.0	10.2	10.2	10.1
6:44:00 AM	8.1	8.7	10.2	9.0	10.0	10.1	10.2	10.1
6:45:00 AM	8.1	8.7	10.2	9.0	10.0	10.1	10.1	10.1
6:46:00 AM	7.8	8.4	9.9	8.7	10.0	10.1	10.1	10.1
6:47:00 AM	7.7	8.2	9.8	8.6	10.0	10.1	10.2	10.1
6:48:00 AM	8.0	8.6	10.2	8.9	10.0	10.1	10.1	10.1
6:49:00 AM	8.0	8.6	10.1	8.9	10.0	10.1	10.1	10.1
6:50:00 AM	8.0	8.6	10.1	8.9	10.0	10.1	10.2	10.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:51:00 AM	8.1	8.7	10.2	9.0	10.0	10.1	10.2	10.1
6:52:00 AM	8.1	8.7	10.2	9.0	10.0	10.1	10.1	10.1
6:53:00 AM	8.1	8.7	10.2	9.0	10.0	10.1	10.1	10.1
6:54:00 AM	8.0	8.5	10.1	8.9	10.0	10.1	10.2	10.1
6:55:00 AM	7.9	8.5	10.0	8.8	10.0	10.1	10.3	10.1
6:56:00 AM	7.8	8.4	10.0	8.7	10.0	9.8	10.0	9.9
6:57:00 AM	7.8	8.4	9.9	8.7	10.0	9.8	9.9	9.9
6:58:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
6:59:00 AM	8.0	8.6	10.1	8.9	10.0	10.1	10.1	10.1
7:00:00 AM	7.6	8.2	9.8	8.5	10.0	10.1	10.1	10.1
7:01:00 AM	7.8	8.4	10.0	8.7	9.0	10.0	10.0	9.7
7:02:00 AM	7.9	8.5	10.0	8.8	10.0	10.0	10.0	10.0
7:03:00 AM	7.9	8.5	10.1	8.8	10.0	9.9	10.0	10.0
7:04:00 AM	7.9	8.5	10.0	8.8	10.0	10.1	10.1	10.1
7:05:00 AM	7.9	8.5	10.0	8.8	10.0	10.0	10.2	10.1
7:06:00 AM	7.7	8.4	9.9	8.7	10.0	10.1	10.1	10.1
7:07:00 AM	7.9	8.5	10.0	8.8	10.0	10.0	10.1	10.0
7:08:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
7:09:00 AM	7.9	8.7	10.0	8.9	10.0	9.9	10.0	10.0
7:10:00 AM	7.9	8.5	10.0	8.8	9.0	9.9	9.9	9.6
7:11:00 AM	7.9	8.5	10.1	8.8	10.0	10.0	10.0	10.0
7:12:00 AM	8.1	8.7	10.2	9.0	10.0	9.9	10.0	10.0
7:13:00 AM	8.0	8.6	10.1	8.9	10.0	10.0	10.1	10.0
7:14:00 AM	7.8	8.4	9.9	8.7	10.0	10.0	10.1	10.0
7:15:00 AM	7.8	8.4	9.9	8.7	10.0	10.1	10.2	10.1
7:16:00 AM	7.9	8.5	10.0	8.8	10.0	10.0	10.1	10.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:17:00 AM	8.0	8.6	10.2	8.9	10.0	10.0	10.0	10.0
7:18:00 AM	8.0	8.6	10.1	8.9	10.0	9.9	10.0	10.0
7:19:00 AM	8.0	8.6	10.1	8.9	10.0	9.9	10.0	10.0
7:20:00 AM	8.0	8.6	10.1	8.9	10.0	9.9	9.9	9.9
7:21:00 AM	8.0	8.6	10.1	8.9	10.0	9.9	10.0	10.0
7:22:00 AM	7.9	8.5	10.1	8.8	10.0	9.8	10.0	9.9
7:23:00 AM	7.8	8.4	10.0	8.7	10.0	9.7	9.8	9.8
7:24:00 AM	7.8	8.4	10.0	8.7	10.0	9.6	9.7	9.8
7:25:00 AM	8.0	8.6	10.1	8.9	9.0	9.7	9.7	9.5
7:26:00 AM	7.9	8.5	10.1	8.8	9.0	9.6	9.6	9.4
7:27:00 AM	8.0	8.6	10.1	8.9	9.0	9.7	9.8	9.5
7:28:00 AM	8.1	8.7	10.2	9.0	9.0	9.6	9.7	9.4
7:29:00 AM	8.0	8.7	10.2	9.0	9.0	9.8	9.9	9.6
7:30:00 AM	8.1	8.7	10.2	9.0	9.0	9.7	9.7	9.5
7:31:00 AM	8.1	8.7	10.2	9.0	9.0	9.7	9.8	9.5
7:32:00 AM	8.2	8.7	10.3	9.1	9.0	9.8	9.9	9.6
7:33:00 AM	8.1	8.7	10.2	9.0	10.0	9.7	9.8	9.8
7:34:00 AM	8.2	8.8	10.3	9.1	9.0	9.6	9.7	9.4
7:35:00 AM	8.3	8.8	10.3	9.1	9.0	9.6	9.7	9.4
7:36:00 AM	8.2	8.8	10.3	9.1	10.0	9.7	9.8	9.8
7:37:00 AM	8.3	8.9	10.4	9.2	10.0	9.7	9.8	9.8
7:38:00 AM	8.2	8.9	10.4	9.2	9.0	9.7	9.9	9.5
7:39:00 AM	8.3	8.9	10.4	9.2	10.0	9.8	9.9	9.9
7:40:00 AM	8.4	8.9	10.5	9.3	9.0	9.7	9.9	9.5
7:41:00 AM	8.4	8.9	10.5	9.3	10.0	9.9	9.9	9.9
7:42:00 AM	8.5	9.2	10.6	9.4	10.0	9.9	9.9	9.9

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:43:00 AM	8.5	9.1	10.6	9.4	9.0	9.9	9.9	9.6
7:44:00 AM	8.5	9.1	10.6	9.4	10.0	9.9	9.9	9.9
7:45:00 AM	8.6	9.1	10.6	9.4	9.0	9.8	9.9	9.6
7:46:00 AM	8.7	9.3	10.8	9.6	9.0	9.8	9.9	9.6
7:47:00 AM	8.8	9.3	10.9	9.7	10.0	9.9	10.0	10.0
7:48:00 AM	8.9	9.4	11.0	9.8	9.0	9.9	10.0	9.6
7:49:00 AM	9.0	9.6	11.1	9.9	10.0	9.9	10.0	10.0
7:50:00 AM	9.1	9.7	11.2	10.0	10.0	9.9	10.1	10.0
7:51:00 AM	9.2	9.7	11.3	10.1	10.0	10.0	10.1	10.0
7:52:00 AM	9.1	9.7	11.3	10.0	10.0	10.0	10.1	10.0
7:53:00 AM	9.6	10.0	11.7	10.4	10.0	10.0	10.1	10.0
7:54:00 AM	9.5	9.9	11.6	10.3	10.0	9.9	10.1	10.0
7:55:00 AM	9.4	9.8	11.5	10.2	10.0	10.0	10.1	10.0
7:56:00 AM	9.7	10.1	11.7	10.5	10.0	10.0	10.1	10.0
7:57:00 AM	10.0	10.4	12.2	10.9	10.0	10.1	10.1	10.1
7:58:00 AM	9.9	10.2	11.9	10.7	10.0	10.1	10.2	10.1
7:59:00 AM	9.4	9.9	11.4	10.2	10.0	10.1	10.2	10.1
8:00:00 AM	9.5	9.9	11.6	10.3	10.0	10.1	10.3	10.1
8:01:00 AM	9.4	9.9	11.4	10.2	10.0	10.1	10.2	10.1
8:02:00 AM	10.0	10.4	12.1	10.8	11.0	10.1	10.2	10.4
8:03:00 AM	10.3	10.6	12.4	11.1	11.0	10.1	10.2	10.4
8:04:00 AM	10.5	10.8	12.6	11.3	12.0	10.2	10.3	10.8
8:05:00 AM	9.7	10.2	11.8	10.6	11.0	10.3	10.4	10.6
8:06:00 AM	10.2	10.7	12.2	11.0	11.0	10.3	10.4	10.6
8:07:00 AM	10.5	10.9	12.9	11.4	12.0	10.3	10.4	10.9
8:08:00 AM	10.9	11.3	13.0	11.7	12.0	10.4	10.5	11.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:09:00 AM	9.9	10.4	11.9	10.7	12.0	10.4	10.5	11.0
8:10:00 AM	10.5	10.9	12.4	11.3	12.0	10.4	10.5	11.0
8:11:00 AM	9.7	10.2	11.7	10.5	11.0	10.5	10.5	10.7
8:12:00 AM	9.6	10.1	11.6	10.4	11.0	10.4	10.5	10.6
8:13:00 AM	9.4	10.0	11.4	10.3	10.0	10.4	10.5	10.3
8:14:00 AM	9.4	10.0	11.5	10.3	10.0	10.4	10.5	10.3
8:15:00 AM	9.6	10.2	11.7	10.5	10.0	10.3	10.4	10.2
8:16:00 AM	9.5	10.1	11.6	10.4	10.0	10.3	10.4	10.2
8:17:00 AM	10.0	10.6	12.0	10.9	10.0	10.4	10.5	10.3
8:18:00 AM	11.7	12.2	13.6	12.5	11.0	10.4	10.6	10.7
8:19:00 AM	10.6	11.0	12.6	11.4	10.0	10.5	10.7	10.4
8:20:00 AM	10.2	10.6	12.1	11.0	10.0	10.5	10.6	10.4
8:21:00 AM	11.0	11.5	13.1	11.9	10.0	10.5	10.7	10.4
8:22:00 AM	10.3	10.8	12.4	11.2	10.0	10.5	10.7	10.4
8:23:00 AM	10.0	10.6	12.0	10.9	10.0	10.5	10.7	10.4
8:24:00 AM	10.3	10.9	12.3	11.2	10.0	10.6	10.7	10.4
8:25:00 AM	11.1	11.5	13.1	11.9	10.0	10.7	10.8	10.5
8:26:00 AM	11.6	11.9	13.7	12.4	10.0	10.8	11.0	10.6
8:27:00 AM	12.3	12.6	14.2	13.0	10.0	10.9	11.4	10.8
8:28:00 AM	11.7	11.7	14.0	12.5	10.0	11.0	11.6	10.9
8:29:00 AM	10.9	11.4	12.8	11.7	10.0	10.9	11.1	10.7
8:30:00 AM	10.4	11.0	12.4	11.3	10.0	10.9	11.1	10.7
8:31:00 AM	10.4	10.9	12.4	11.2	10.0	10.9	11.1	10.7
8:32:00 AM	10.3	10.7	12.4	11.1	10.0	10.9	11.0	10.6
8:33:00 AM	10.4	10.9	12.5	11.3	10.0	10.9	10.9	10.6
8:34:00 AM	10.5	11.2	12.5	11.4	10.0	10.9	11.0	10.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:35:00 AM	10.5	11.1	12.4	11.3	10.0	10.9	11.0	10.6
8:36:00 AM	10.4	10.9	12.4	11.2	10.0	10.9	11.0	10.6
8:37:00 AM	10.4	10.9	12.4	11.2	11.0	10.9	11.0	11.0
8:38:00 AM	10.9	11.5	13.0	11.8	10.0	10.8	10.9	10.6
8:39:00 AM	11.0	11.4	13.0	11.8	10.0	10.9	11.0	10.6
8:40:00 AM	11.0	11.6	13.0	11.9	10.0	10.9	11.0	10.6
8:41:00 AM	10.7	11.0	12.8	11.5	10.0	10.9	11.0	10.6
8:42:00 AM	10.5	10.8	12.7	11.3	10.0	11.0	11.0	10.7
8:43:00 AM	10.9	11.5	12.8	11.7	10.0	11.0	11.1	10.7
8:44:00 AM	10.6	11.1	12.6	11.4	10.0	11.0	11.1	10.7
8:45:00 AM	10.6	11.2	12.6	11.5	11.0	11.1	11.0	11.0
8:46:00 AM	10.8	11.4	12.8	11.7	11.0	11.2	11.1	11.1
8:47:00 AM	11.2	11.8	13.3	12.1	10.0	11.1	11.1	10.7
8:48:00 AM	10.9	11.5	12.9	11.8	10.0	11.0	11.1	10.7
8:49:00 AM	10.9	11.4	12.9	11.7	11.0	11.1	11.2	11.1
8:50:00 AM	11.0	11.6	13.1	11.9	10.0	11.1	11.2	10.8
8:51:00 AM	11.1	11.7	13.2	12.0	11.0	11.2	11.3	11.2
8:52:00 AM	12.9	13.4	15.1	13.8	11.0	11.2	11.3	11.2
8:53:00 AM	13.8	14.1	15.9	14.6	11.0	11.2	11.4	11.2
8:54:00 AM	14.4	14.9	16.5	15.3	11.0	11.4	11.4	11.3
8:55:00 AM	14.6	15.3	17.2	15.7	11.0	11.5	11.6	11.4
8:56:00 AM	14.1	14.3	16.2	14.9	11.0	11.7	11.7	11.5
8:57:00 AM	14.0	14.1	16.6	14.9	11.0	11.8	11.7	11.5
8:58:00 AM	14.6	14.6	17.2	15.5	11.0	11.6	11.8	11.5
8:59:00 AM	14.2	14.2	16.7	15.0	11.0	11.6	11.7	11.4
9:00:00 AM	14.6	14.6	16.7	15.3	11.0	11.7	11.8	11.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:01:00 AM	15.1	15.4	17.3	15.9	12.0	11.8	12.0	11.9
9:02:00 AM	14.0	14.3	16.0	14.8	12.0	11.9	12.0	12.0
9:03:00 AM	14.1	14.5	16.3	15.0	12.0	12.0	12.0	12.0
9:04:00 AM	14.0	14.1	16.2	14.8	12.0	11.9	12.0	12.0
9:05:00 AM	14.6	14.9	16.7	15.4	12.0	12.0	12.1	12.0
9:06:00 AM	14.4	14.6	16.7	15.2	12.0	12.0	12.2	12.1
9:07:00 AM	15.3	15.6	17.5	16.1	12.0	12.2	12.3	12.2
9:08:00 AM	15.0	15.3	17.3	15.9	12.0	12.2	12.4	12.2
9:09:00 AM	14.9	14.9	17.1	15.6	12.0	12.3	12.4	12.2
9:10:00 AM	14.9	15.1	17.1	15.7	12.0	12.3	12.5	12.3
9:11:00 AM	14.0	13.9	16.2	14.7	12.0	12.4	12.4	12.3
9:12:00 AM	14.1	14.1	16.1	14.8	12.0	12.1	12.2	12.1
9:13:00 AM	14.2	14.2	16.5	15.0	12.0	12.1	12.2	12.1
9:14:00 AM	14.2	14.3	16.7	15.1	12.0	12.1	12.2	12.1
9:15:00 AM	14.1	14.3	16.6	15.0	12.0	12.2	12.2	12.1
9:16:00 AM	14.8	15.0	17.2	15.7	12.0	12.1	12.3	12.1
9:17:00 AM	14.2	14.4	16.7	15.1	12.0	12.2	12.3	12.2
9:18:00 AM	15.0	15.1	17.3	15.8	12.0	12.2	12.3	12.2
9:19:00 AM	14.8	14.9	16.9	15.5	12.0	12.3	12.5	12.3
9:20:00 AM	15.3	15.0	17.0	15.8	12.0	12.4	12.6	12.3
9:21:00 AM	14.6	14.6	17.0	15.4	12.0	12.4	12.5	12.3
9:22:00 AM	14.8	14.9	17.3	15.7	12.0	12.6	12.6	12.4
9:23:00 AM	14.7	14.9	17.1	15.6	12.0	12.5	12.5	12.3
9:24:00 AM	15.4	15.8	17.8	16.3	12.0	12.5	12.5	12.3
9:25:00 AM	14.7	15.2	17.7	15.9	12.0	12.7	12.6	12.4
9:26:00 AM	14.9	15.6	17.8	16.1	12.0	12.5	12.7	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:27:00 AM	15.0	15.9	17.7	16.2	12.0	12.6	12.8	12.5
9:28:00 AM	15.9	16.4	18.6	17.0	12.0	12.8	12.9	12.6
9:29:00 AM	16.2	16.7	18.9	17.3	13.0	12.8	12.9	12.9
9:30:00 AM	14.8	15.1	17.3	15.7	13.0	12.8	13.0	12.9
9:31:00 AM	14.6	14.8	17.1	15.5	12.0	12.7	12.8	12.5
9:32:00 AM	14.7	15.3	17.4	15.8	13.0	12.7	12.9	12.9
9:33:00 AM	14.3	14.6	17.2	15.4	12.0	12.7	12.8	12.5
9:34:00 AM	14.5	14.8	17.0	15.4	12.0	12.6	12.8	12.5
9:35:00 AM	14.7	14.9	17.0	15.5	12.0	12.6	12.8	12.5
9:36:00 AM	14.8	15.1	17.1	15.7	12.0	12.7	12.8	12.5
9:37:00 AM	15.0	15.1	17.4	15.8	13.0	12.8	12.9	12.9
9:38:00 AM	15.4	15.6	17.9	16.3	12.0	12.9	13.0	12.6
9:39:00 AM	15.5	15.5	17.9	16.3	13.0	12.8	13.0	12.9
9:40:00 AM	15.7	15.8	18.4	16.6	12.0	12.8	12.9	12.6
9:41:00 AM	16.0	16.8	18.7	17.2	13.0	12.9	13.1	13.0
9:42:00 AM	16.1	16.9	18.6	17.2	13.0	13.2	13.3	13.2
9:43:00 AM	16.2	16.7	18.4	17.1	13.0	13.3	13.5	13.3
9:44:00 AM	17.5	18.0	19.2	18.2	13.0	13.4	13.5	13.3
9:45:00 AM	16.8	16.8	18.7	17.4	13.0	13.3	13.5	13.3
9:46:00 AM	16.8	16.7	18.7	17.4	13.0	13.3	13.4	13.2
9:47:00 AM	16.4	17.1	18.7	17.4	13.0	13.4	13.6	13.3
9:48:00 AM	17.2	17.4	19.3	18.0	13.0	13.7	13.7	13.5
9:49:00 AM	16.4	16.8	18.9	17.4	13.0	13.7	13.9	13.5
9:50:00 AM	16.2	16.6	18.8	17.2	13.0	13.8	13.9	13.6
9:51:00 AM	16.4	16.9	19.0	17.4	13.0	13.6	13.7	13.4
9:52:00 AM	15.5	15.7	17.8	16.3	13.0	13.6	13.7	13.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:53:00 AM	15.1	15.7	17.8	16.2	13.0	13.5	13.7	13.4
9:54:00 AM	14.8	15.1	17.2	15.7	13.0	13.7	13.7	13.5
9:55:00 AM	15.3	15.9	18.0	16.4	13.0	13.4	13.6	13.3
9:56:00 AM	15.6	16.3	18.4	16.8	13.0	13.6	13.7	13.4
9:57:00 AM	15.5	16.5	18.8	16.9	13.0	13.5	13.7	13.4
9:58:00 AM	15.5	16.8	19.1	17.1	13.0	13.7	13.7	13.5
9:59:00 AM	15.6	17.4	19.6	17.5	13.0	13.7	13.9	13.5
10:00:00 AM	15.6	17.9	19.7	17.7	13.0	13.9	14.0	13.6
10:01:00 AM	15.5	17.4	19.6	17.5	13.0	14.1	14.1	13.7
10:02:00 AM	15.8	17.0	18.4	17.1	13.0	13.9	14.1	13.7
10:03:00 AM	16.8	18.0	20.0	18.3	13.0	13.9	14.1	13.7
10:04:00 AM	18.7	18.8	20.9	19.5	14.0	14.3	14.3	14.2
10:05:00 AM	17.9	18.6	20.5	19.0	14.0	14.4	14.6	14.3
10:06:00 AM	17.8	18.4	20.2	18.8	14.0	14.4	14.6	14.3
10:07:00 AM	17.4	18.1	20.5	18.7	14.0	14.5	14.5	14.3
10:08:00 AM	18.3	18.9	21.0	19.4	14.0	14.3	14.5	14.3
10:09:00 AM	19.0	19.0	21.1	19.7	14.0	14.3	14.5	14.3
10:10:00 AM	17.7	18.3	20.3	18.8	14.0	14.4	14.6	14.3
10:11:00 AM	21.2	21.5	23.5	22.1	14.0	14.4	14.6	14.3
10:12:00 AM	21.4	21.2	23.4	22.0	14.0	14.4	14.6	14.3
10:13:00 AM	19.3	19.1	21.2	19.9	14.0	14.8	14.6	14.5
10:14:00 AM	20.0	19.2	21.9	20.4	14.0	15.0	15.1	14.7
10:15:00 AM	18.4	18.4	20.2	19.0	14.0	15.0	15.1	14.7
10:16:00 AM	18.0	18.1	19.9	18.7	14.0	15.0	15.1	14.7
10:17:00 AM	16.3	16.7	18.3	17.1	15.0	14.9	15.0	15.0
10:18:00 AM	17.6	18.5	20.6	18.9	15.0	14.8	14.9	14.9

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:19:00 AM	19.1	18.6	21.1	19.6	14.0	14.6	14.8	14.5
10:20:00 AM	18.1	18.8	20.7	19.2	14.0	14.7	14.9	14.5
10:21:00 AM	19.2	18.9	20.9	19.7	14.0	14.7	14.9	14.5
10:22:00 AM	19.5	18.8	21.1	19.8	14.0	14.9	15.1	14.7
10:23:00 AM	20.1	20.2	22.0	20.8	14.0	14.9	15.0	14.6
10:24:00 AM	19.2	19.3	21.3	19.9	15.0	15.0	15.2	15.1
10:25:00 AM	18.0	17.8	19.9	18.6	15.0	15.4	15.5	15.3
10:26:00 AM	20.3	19.5	22.2	20.7	15.0	15.6	15.8	15.5
10:27:00 AM	17.5	17.4	19.7	18.2	15.0	15.7	15.9	15.5
10:28:00 AM	17.0	17.4	19.1	17.8	15.0	15.7	15.9	15.5
10:29:00 AM	16.5	16.6	18.5	17.2	15.0	15.6	15.8	15.5
10:30:00 AM	16.8	17.1	18.8	17.6	15.0	15.4	15.6	15.3
10:31:00 AM	17.3	17.5	19.5	18.1	15.0	15.4	15.6	15.3
10:32:00 AM	16.5	16.9	18.5	17.3	15.0	15.5	15.6	15.4
10:33:00 AM	16.8	17.4	19.0	17.7	15.0	15.5	15.7	15.4
10:34:00 AM	17.0	17.6	19.5	18.0	15.0	15.5	15.6	15.4
10:35:00 AM	16.9	17.5	19.0	17.8	15.0	15.4	15.6	15.3
10:36:00 AM	16.7	17.1	18.7	17.5	15.0	15.6	15.8	15.5
10:37:00 AM	16.9	16.7	18.6	17.4	15.0	15.6	15.8	15.5
10:38:00 AM	16.6	16.6	18.5	17.2	15.0	15.5	15.7	15.4
10:39:00 AM	16.9	18.1	20.1	18.4	15.0	15.5	15.7	15.4
10:40:00 AM	16.8	17.5	19.3	17.9	15.0	15.5	15.7	15.4
10:41:00 AM	17.9	18.3	19.9	18.7	15.0	15.7	15.8	15.5
10:42:00 AM	17.8	17.8	19.7	18.4	15.0	15.8	16.0	15.6
10:43:00 AM	19.1	18.8	21.2	19.7	15.0	15.8	16.0	15.6
10:44:00 AM	19.9	20.0	21.9	20.6	15.0	16.0	16.1	15.7

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:45:00 AM	20.0	20.0	22.6	20.9	15.0	16.3	16.3	15.9
10:46:00 AM	18.4	18.5	20.2	19.0	16.0	16.5	16.5	16.3
10:47:00 AM	19.2	20.9	22.8	21.0	16.0	16.6	16.6	16.4
10:48:00 AM	19.3	19.5	21.7	20.2	16.0	16.9	16.9	16.6
10:49:00 AM	20.4	20.4	22.5	21.1	16.0	16.6	16.6	16.4
10:50:00 AM	18.8	20.5	22.7	20.7	16.0	16.6	16.7	16.4
10:51:00 AM	18.9	20.1	22.4	20.5	16.0	16.3	16.6	16.3
10:52:00 AM	17.0	17.0	18.8	17.6	16.0	16.1	16.1	16.1
10:53:00 AM	17.2	17.7	19.5	18.1	15.0	16.1	16.1	15.7
10:54:00 AM	17.4	18.0	19.7	18.4	16.0	16.1	16.1	16.1
10:55:00 AM	17.4	18.2	20.1	18.6	15.0	16.2	16.2	15.8
10:56:00 AM	17.1	17.4	18.9	17.8	15.0	16.2	16.2	15.8
10:57:00 AM	17.1	17.6	19.3	18.0	16.0	16.2	16.3	16.2
10:58:00 AM	16.8	16.7	18.8	17.4	15.0	15.7	15.9	15.5
10:59:00 AM	17.0	17.0	18.8	17.6	15.0	15.5	15.7	15.4
11:00:00 AM	17.7	18.0	19.8	18.5	15.0	15.6	15.7	15.4
11:01:00 AM	18.3	19.0	20.4	19.2	15.0	15.8	16.0	15.6
11:02:00 AM	17.3	17.7	19.3	18.1	15.0	16.1	16.1	15.7
11:03:00 AM	18.2	18.4	20.2	18.9	15.0	16.3	16.3	15.9
11:04:00 AM	18.0	19.3	21.8	19.7	15.0	16.2	16.2	15.8
11:05:00 AM	19.0	19.9	21.9	20.3	16.0	16.5	16.5	16.3
11:06:00 AM	18.5	19.3	20.9	19.6	16.0	16.5	16.5	16.3
11:07:00 AM	18.1	18.4	20.3	18.9	16.0	16.6	16.7	16.4
11:08:00 AM	17.1	18.0	19.8	18.3	16.0	16.6	16.6	16.4
11:09:00 AM	17.8	18.8	21.0	19.2	16.0	16.4	16.4	16.3
11:10:00 AM	18.8	20.0	22.0	20.3	16.0	16.4	16.4	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:11:00 AM	17.9	17.8	20.4	18.7	16.0	16.3	16.5	16.3
11:12:00 AM	18.9	19.6	21.8	20.1	16.0	16.3	16.5	16.3
11:13:00 AM	17.6	18.0	20.6	18.7	16.0	16.7	16.8	16.5
11:14:00 AM	17.1	17.7	19.3	18.0	16.0	16.3	16.3	16.2
11:15:00 AM	17.5	18.2	19.9	18.5	16.0	16.4	16.4	16.3
11:16:00 AM	17.3	18.7	20.7	18.9	16.0	16.5	16.5	16.3
11:17:00 AM	17.4	18.7	20.8	19.0	16.0	16.4	16.4	16.3
11:18:00 AM	18.4	20.2	21.9	20.2	16.0	16.4	16.4	16.3
11:19:00 AM	17.9	18.6	20.4	19.0	16.0	16.7	16.7	16.5
11:20:00 AM	18.9	20.9	23.2	21.0	16.0	16.8	16.9	16.6
11:21:00 AM	18.2	20.1	22.4	20.2	16.0	16.5	16.7	16.4
11:22:00 AM	17.7	18.4	20.5	18.9	16.0	16.6	16.7	16.4
11:23:00 AM	18.1	20.0	22.0	20.0	16.0	16.5	16.7	16.4
11:24:00 AM	17.6	20.4	22.2	20.1	16.0	16.3	16.3	16.2
11:25:00 AM	18.5	20.9	23.1	20.8	16.0	16.3	16.4	16.2
11:26:00 AM	18.4	20.3	22.5	20.4	16.0	16.7	16.8	16.5
11:27:00 AM	17.8	18.6	21.1	19.2	16.0	16.9	17.0	16.6
11:28:00 AM	17.8	19.7	22.0	19.8	16.0	16.4	16.6	16.3
11:29:00 AM	18.0	19.6	21.7	19.8	16.0	16.4	16.5	16.3
11:30:00 AM	19.4	21.5	23.5	21.5	16.0	16.9	17.0	16.6
11:31:00 AM	17.8	19.2	21.4	19.5	16.0	16.9	17.0	16.6
11:32:00 AM	18.3	19.6	21.6	19.8	16.0	16.8	17.0	16.6
11:33:00 AM	16.5	17.1	18.7	17.4	16.0	16.5	16.6	16.4
11:34:00 AM	16.5	16.9	18.4	17.3	16.0	16.2	16.3	16.2
11:35:00 AM	17.4	19.4	21.5	19.4	16.0	16.3	16.5	16.3
11:36:00 AM	17.4	18.9	21.5	19.3	16.0	16.4	16.6	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:37:00 AM	17.9	19.1	21.3	19.4	16.0	16.5	16.7	16.4
11:38:00 AM	17.5	18.6	20.5	18.9	16.0	16.5	16.7	16.4
11:39:00 AM	18.5	19.4	22.1	20.0	16.0	16.6	16.8	16.5
11:40:00 AM	18.5	19.3	21.9	19.9	16.0	16.8	17.0	16.6
11:41:00 AM	18.0	19.5	21.8	19.8	16.0	16.7	16.9	16.5
11:42:00 AM	18.4	20.0	21.9	20.1	17.0	17.0	17.1	17.0
11:43:00 AM	18.6	19.9	22.0	20.2	16.0	16.8	16.9	16.6
11:44:00 AM	17.8	19.0	21.3	19.4	16.0	16.9	17.0	16.6
11:45:00 AM	17.3	18.1	20.4	18.6	16.0	16.6	16.7	16.4
11:46:00 AM	17.7	20.1	22.2	20.0	16.0	16.5	16.7	16.4
11:47:00 AM	18.1	19.6	21.6	19.8	16.0	16.5	16.7	16.4
11:48:00 AM	18.6	20.7	22.8	20.7	16.0	16.7	16.9	16.5
11:49:00 AM	19.0	20.6	22.8	20.8	16.0	16.7	16.9	16.5
11:50:00 AM	19.0	20.3	22.2	20.5	16.0	16.9	17.0	16.6
11:51:00 AM	18.7	20.0	21.9	20.2	16.0	16.7	16.9	16.5
11:52:00 AM	19.5	21.0	22.9	21.1	16.0	16.9	17.0	16.6
11:53:00 AM	19.0	19.7	21.8	20.2	17.0	17.3	17.5	17.3
11:54:00 AM	17.2	17.7	19.6	18.2	16.0	16.8	16.9	16.6
11:55:00 AM	18.5	19.5	21.9	20.0	16.0	16.6	16.7	16.4
11:56:00 AM	19.1	20.5	22.8	20.8	16.0	16.9	17.0	16.6
11:57:00 AM	18.7	20.5	22.3	20.5	17.0	17.2	17.4	17.2
11:58:00 AM	18.4	19.2	21.4	19.7	17.0	17.4	17.6	17.3
11:59:00 AM	17.9	18.8	20.7	19.1	17.0	17.0	17.2	17.1
12:00:00 PM	18.1	20.1	21.7	20.0	16.0	16.7	16.8	16.5
12:01:00 PM	18.8	19.6	22.5	20.3	16.0	16.9	17.0	16.6
12:02:00 PM	17.7	19.2	21.4	19.4	16.0	16.8	16.9	16.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:03:00 PM	18.5	20.3	22.3	20.4	16.0	16.7	16.9	16.5
12:04:00 PM	18.7	20.3	22.2	20.4	16.0	17.0	17.1	16.7
12:05:00 PM	19.4	21.1	23.0	21.2	17.0	17.2	17.4	17.2
12:06:00 PM	19.1	21.7	23.8	21.5	17.0	17.1	17.3	17.1
12:07:00 PM	19.8	22.0	24.6	22.1	17.0	17.2	17.4	17.2
12:08:00 PM	19.5	20.4	23.8	21.2	17.0	17.4	17.6	17.3
12:09:00 PM	18.7	19.9	21.8	20.1	17.0	17.5	17.7	17.4
12:10:00 PM	18.8	20.0	21.9	20.2	17.0	17.6	17.8	17.5
12:11:00 PM	18.8	20.2	22.4	20.5	17.0	17.7	17.9	17.5
12:12:00 PM	17.6	18.5	20.4	18.8	17.0	17.2	17.3	17.2
12:13:00 PM	18.5	19.7	21.2	19.8	17.0	16.9	17.0	17.0
12:14:00 PM	19.0	19.7	21.8	20.2	17.0	17.4	17.5	17.3
12:15:00 PM	17.5	18.3	20.1	18.6	17.0	17.3	17.5	17.3
12:16:00 PM	18.1	18.6	20.1	18.9	17.0	17.2	17.4	17.2
12:17:00 PM	17.7	18.9	20.5	19.0	17.0	17.2	17.4	17.2
12:18:00 PM	18.2	19.7	21.3	19.7	17.0	17.0	17.2	17.1
12:19:00 PM	18.2	19.2	21.0	19.5	17.0	17.1	17.3	17.1
12:20:00 PM	18.5	19.2	21.3	19.7	17.0	17.1	17.3	17.1
12:21:00 PM	18.2	18.9	21.2	19.4	17.0	17.0	17.2	17.1
12:22:00 PM	19.6	20.9	23.4	21.3	17.0	16.9	17.1	17.0
12:23:00 PM	20.1	21.5	23.5	21.7	17.0	17.2	17.3	17.2
12:24:00 PM	18.9	19.4	21.0	19.8	17.0	17.3	17.4	17.2
12:25:00 PM	18.6	18.7	20.9	19.4	17.0	17.3	17.4	17.2
12:26:00 PM	19.1	19.3	21.2	19.9	17.0	17.2	17.4	17.2
12:27:00 PM	19.2	19.5	21.6	20.1	17.0	17.0	17.2	17.1
12:28:00 PM	20.8	21.3	24.0	22.0	17.0	17.0	17.1	17.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:29:00 PM	20.5	20.5	23.2	21.4	17.0	17.1	17.3	17.1
12:30:00 PM	19.0	18.4	21.3	19.6	17.0	17.2	17.4	17.2
12:31:00 PM	19.9	20.3	21.9	20.7	17.0	17.1	17.3	17.1
12:32:00 PM	20.4	21.1	23.3	21.6	17.0	17.4	17.6	17.3
12:33:00 PM	20.3	20.8	22.5	21.2	17.0	17.5	17.7	17.4
12:34:00 PM	19.2	19.6	21.2	20.0	17.0	17.8	18.0	17.6
12:35:00 PM	18.5	18.8	20.3	19.2	17.0	17.5	17.7	17.4
12:36:00 PM	20.3	20.5	22.3	21.0	17.0	17.7	17.8	17.5
12:37:00 PM	18.7	19.0	20.7	19.5	17.0	18.0	18.1	17.7
12:38:00 PM	18.9	19.6	21.4	20.0	17.0	17.7	17.9	17.5
12:39:00 PM	19.8	20.3	22.4	20.8	17.0	17.7	17.7	17.5
12:40:00 PM	19.6	20.6	22.8	21.0	17.0	17.6	17.6	17.4
12:41:00 PM	19.9	21.2	23.0	21.4	17.0	17.5	17.5	17.3
12:42:00 PM	20.7	21.0	23.2	21.6	17.0	17.4	17.4	17.3
12:43:00 PM	21.3	20.8	23.1	21.7	17.0	17.6	17.6	17.4
12:44:00 PM	21.0	21.0	22.8	21.6	17.0	17.9	17.9	17.6
12:45:00 PM	20.5	20.4	22.3	21.1	17.0	17.9	17.9	17.6
12:46:00 PM	20.6	20.7	22.4	21.2	17.0	17.7	17.7	17.5
12:47:00 PM	22.0	21.8	23.8	22.5	17.0	17.8	17.8	17.5
12:48:00 PM	21.0	20.8	22.8	21.5	17.0	18.3	18.4	17.9
12:49:00 PM	18.4	19.0	20.7	19.4	17.0	18.1	18.1	17.7
12:50:00 PM	19.9	20.2	22.4	20.8	17.0	17.8	17.8	17.5
12:51:00 PM	19.6	20.1	22.4	20.7	17.0	17.4	17.6	17.3
12:52:00 PM	20.4	19.8	22.0	20.7	17.0	17.5	17.7	17.4
12:53:00 PM	21.8	22.5	24.5	22.9	17.0	17.4	17.6	17.3
12:54:00 PM	21.3	22.4	24.1	22.6	17.0	17.5	17.7	17.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:55:00 PM	20.8	20.8	22.9	21.5	17.0	17.8	17.8	17.5
12:56:00 PM	21.5	21.3	23.0	21.9	17.0	17.8	17.9	17.6
12:57:00 PM	21.8	21.3	23.2	22.1	17.0	18.3	18.3	17.9
12:58:00 PM	20.7	20.4	22.0	21.0	18.0	18.4	18.4	18.3
12:59:00 PM	20.1	19.6	22.0	20.6	17.0	18.3	18.2	17.8
1:00:00 PM	21.2	22.5	24.2	22.6	17.0	18.2	18.2	17.8
1:01:00 PM	22.1	22.0	23.7	22.6	17.0	18.3	18.3	17.9
1:02:00 PM	22.3	21.4	23.9	22.5	18.0	18.6	18.6	18.4
1:03:00 PM	22.6	22.0	24.1	22.9	18.0	18.3	18.5	18.3
1:04:00 PM	21.6	22.0	24.1	22.6	18.0	18.6	18.7	18.4
1:05:00 PM	19.1	20.3	22.1	20.5	18.0	18.4	18.5	18.3
1:06:00 PM	22.2	22.1	23.8	22.7	18.0	18.4	18.4	18.3
1:07:00 PM	21.9	21.6	23.1	22.2	18.0	18.3	18.4	18.2
1:08:00 PM	21.4	22.1	23.8	22.4	18.0	18.4	18.4	18.3
1:09:00 PM	21.8	21.5	23.0	22.1	18.0	18.2	18.4	18.2
1:10:00 PM	23.7	23.0	24.4	23.7	17.0	18.4	18.4	17.9
1:11:00 PM	19.5	19.2	20.6	19.8	17.0	18.3	18.4	17.9
1:12:00 PM	21.9	22.1	23.0	22.3	17.0	17.9	18.1	17.7
1:13:00 PM	22.8	21.5	22.8	22.4	17.0	18.1	18.1	17.7
1:14:00 PM	23.7	23.3	23.4	23.5	17.0	18.0	18.2	17.7
1:15:00 PM	22.9	23.2	23.1	23.1	17.0	18.3	18.2	17.8
1:16:00 PM	23.1	23.4	23.8	23.4	18.0	18.6	18.7	18.4
1:17:00 PM	22.1	22.6	22.9	22.5	18.0	18.3	18.5	18.3
1:18:00 PM	20.1	20.0	20.6	20.2	18.0	18.6	18.8	18.5
1:19:00 PM	22.7	22.5	22.4	22.5	18.0	18.3	18.3	18.2
1:20:00 PM	22.1	21.5	22.0	21.9	17.0	18.3	18.3	17.9

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:21:00 PM	23.0	22.9	23.3	23.1	18.0	18.2	18.2	18.1
1:22:00 PM	20.9	22.5	23.5	22.3	18.0	18.4	18.6	18.3
1:23:00 PM	21.1	22.2	22.9	22.1	18.0	18.3	18.5	18.3
1:24:00 PM	20.4	21.8	22.9	21.7	18.0	18.3	18.4	18.2
1:25:00 PM	22.3	22.0	22.8	22.4	18.0	18.3	18.5	18.3
1:26:00 PM	23.7	24.4	24.8	24.3	18.0	18.7	18.7	18.5
1:27:00 PM	23.4	23.1	24.3	23.6	18.0	19.2	19.4	18.9
1:28:00 PM	22.4	22.7	23.9	23.0	18.0	19.5	19.5	19.0
1:29:00 PM	23.1	23.2	24.6	23.6	19.0	19.2	19.4	19.2
1:30:00 PM	23.0	22.7	24.4	23.4	19.0	19.2	19.4	19.2
1:31:00 PM	22.9	22.4	24.1	23.1	18.0	19.2	19.4	18.9
1:32:00 PM	22.9	22.0	23.3	22.7	19.0	19.1	19.3	19.1
1:33:00 PM	23.0	22.2	23.5	22.9	18.0	19.2	19.5	18.9
1:34:00 PM	22.5	21.6	23.1	22.4	19.0	19.2	19.4	19.2
1:35:00 PM	22.3	22.1	23.1	22.5	19.0	19.2	19.4	19.2
1:36:00 PM	21.6	21.3	22.9	21.9	19.0	19.3	19.5	19.3
1:37:00 PM	21.4	22.0	23.0	22.1	19.0	19.2	19.4	19.2
1:38:00 PM	22.5	22.3	23.5	22.8	18.0	19.1	19.3	18.8
1:39:00 PM	21.6	21.0	22.3	21.6	19.0	19.1	19.3	19.1
1:40:00 PM	19.8	20.0	21.6	20.5	18.0	19.0	19.2	18.7
1:41:00 PM	19.6	19.6	21.3	20.2	18.0	18.9	19.1	18.7
1:42:00 PM	19.5	19.8	21.3	20.2	18.0	18.9	19.1	18.7
1:43:00 PM	19.1	19.5	20.9	19.8	18.0	18.8	19.0	18.6
1:44:00 PM	19.1	19.7	21.1	20.0	18.0	18.8	18.9	18.6
1:45:00 PM	19.1	19.4	20.9	19.8	18.0	18.7	18.9	18.5
1:46:00 PM	19.0	19.4	20.8	19.7	18.0	18.6	18.7	18.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:47:00 PM	19.0	19.2	20.8	19.7	18.0	18.5	18.6	18.4
1:48:00 PM	21.7	21.6	21.9	21.7	18.0	18.5	18.7	18.4
1:49:00 PM	22.8	23.1	23.1	23.0	18.0	18.8	19.0	18.6
1:50:00 PM	21.7	21.6	22.6	22.0	18.0	19.1	19.3	18.8
1:51:00 PM	22.7	22.0	22.5	22.4	18.0	19.2	19.4	18.9
1:52:00 PM	22.9	22.4	23.0	22.8	19.0	19.3	19.5	19.3
1:53:00 PM	22.1	21.8	22.7	22.2	19.0	19.5	19.7	19.4
1:54:00 PM	22.5	22.1	22.6	22.4	19.0	19.6	19.8	19.5
1:55:00 PM	22.2	21.9	22.3	22.1	19.0	19.6	19.8	19.5
1:56:00 PM	21.7	21.4	22.2	21.8	19.0	19.4	19.6	19.3
1:57:00 PM	21.5	21.0	22.1	21.5	19.0	19.2	19.4	19.2
1:58:00 PM	20.2	20.0	21.9	20.7	19.0	19.1	19.3	19.1
1:59:00 PM	19.5	19.7	21.4	20.2	18.0	19.0	19.2	18.7
2:00:00 PM	21.8	21.2	22.0	21.7	18.0	18.9	19.1	18.7
2:01:00 PM	22.9	22.9	23.0	22.9	18.0	19.2	19.4	18.9
2:02:00 PM	22.4	22.4	22.7	22.5	18.0	19.2	19.4	18.9
2:03:00 PM	22.8	22.4	22.8	22.7	19.0	19.4	19.6	19.3
2:04:00 PM	24.1	23.2	23.7	23.7	19.0	19.3	19.5	19.3
2:05:00 PM	22.4	22.1	22.7	22.4	18.0	19.2	19.3	18.8
2:06:00 PM	22.3	21.9	22.9	22.4	19.0	19.4	19.6	19.3
2:07:00 PM	20.0	19.9	21.5	20.5	19.0	19.3	19.4	19.2
2:08:00 PM	19.8	20.1	21.4	20.4	19.0	19.0	19.2	19.1
2:09:00 PM	19.3	19.5	21.2	20.0	18.0	19.0	19.1	18.7
2:10:00 PM	18.8	19.3	20.8	19.6	18.0	18.9	19.1	18.7
2:11:00 PM	18.8	19.3	20.8	19.6	18.0	18.7	18.9	18.5
2:12:00 PM	18.7	19.2	20.7	19.5	18.0	18.5	18.7	18.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:13:00 PM	19.1	20.0	21.1	20.1	18.0	18.5	18.7	18.4
2:14:00 PM	21.8	22.7	22.6	22.4	18.0	18.6	18.8	18.5
2:15:00 PM	23.0	23.0	22.9	23.0	18.0	18.9	19.1	18.7
2:16:00 PM	23.7	23.2	23.4	23.4	18.0	19.1	19.2	18.8
2:17:00 PM	23.0	22.5	23.0	22.8	18.0	19.2	19.5	18.9
2:18:00 PM	22.6	22.2	23.0	22.6	18.0	19.2	19.5	18.9
2:19:00 PM	23.0	23.4	23.5	23.3	19.0	19.3	19.5	19.3
2:20:00 PM	21.5	22.0	23.1	22.2	19.0	19.4	19.6	19.3
2:21:00 PM	22.2	22.5	23.0	22.6	19.0	19.4	19.6	19.3
2:22:00 PM	19.9	19.6	21.6	20.4	19.0	19.5	19.6	19.4
2:23:00 PM	19.6	20.0	21.5	20.4	18.0	19.0	19.2	18.7
2:24:00 PM	19.7	20.2	21.6	20.5	18.0	19.1	19.3	18.8
2:25:00 PM	19.8	19.8	21.4	20.3	18.0	19.0	19.2	18.7
2:26:00 PM	19.6	19.9	21.2	20.2	18.0	18.8	18.9	18.6
2:27:00 PM	19.2	19.7	21.2	20.0	18.0	18.7	18.9	18.5
2:28:00 PM	19.1	19.3	20.8	19.7	18.0	18.8	19.0	18.6
2:29:00 PM	19.0	19.5	20.8	19.8	18.0	18.6	18.8	18.5
2:30:00 PM	18.8	19.3	20.8	19.6	18.0	18.6	18.7	18.4
2:31:00 PM	19.3	19.7	21.2	20.1	18.0	18.5	18.7	18.4
2:32:00 PM	21.0	21.2	22.0	21.4	18.0	18.6	18.7	18.4
2:33:00 PM	19.1	19.5	20.8	19.8	18.0	18.7	18.9	18.5
2:34:00 PM	20.7	20.6	21.5	20.9	18.0	18.7	18.9	18.5
2:35:00 PM	20.1	20.1	21.6	20.6	18.0	18.7	18.9	18.5
2:36:00 PM	22.7	22.0	22.4	22.4	18.0	18.9	19.1	18.7
2:37:00 PM	24.8	24.2	24.2	24.4	18.0	18.9	19.1	18.7
2:38:00 PM	23.9	23.0	23.5	23.5	18.0	19.1	19.3	18.8

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:39:00 PM	24.7	23.8	24.3	24.3	18.0	19.2	19.4	18.9
2:40:00 PM	22.8	22.2	22.9	22.6	19.0	19.5	19.7	19.4
2:41:00 PM	22.6	21.8	22.7	22.4	19.0	19.6	19.7	19.4
2:42:00 PM	23.1	22.3	23.3	22.9	19.0	19.5	19.7	19.4
2:43:00 PM	21.9	21.3	22.4	21.9	19.0	19.5	19.7	19.4
2:44:00 PM	21.9	22.3	22.9	22.4	19.0	19.4	19.6	19.3
2:45:00 PM	21.7	22.2	23.3	22.4	19.0	19.4	19.6	19.3
2:46:00 PM	22.3	22.4	23.3	22.7	19.0	19.3	19.5	19.3
2:47:00 PM	22.5	22.0	22.8	22.4	19.0	19.5	19.7	19.4
2:48:00 PM	22.7	21.9	23.3	22.6	19.0	19.6	19.8	19.5
2:49:00 PM	23.0	22.0	23.4	22.8	19.0	19.5	19.7	19.4
2:50:00 PM	23.2	22.9	23.9	23.3	19.0	19.5	19.7	19.4
2:51:00 PM	23.2	22.4	23.7	23.1	19.0	19.4	19.6	19.3
2:52:00 PM	23.3	23.5	24.2	23.7	19.0	19.5	19.7	19.4
2:53:00 PM	23.9	22.8	24.2	23.6	19.0	19.6	19.8	19.5
2:54:00 PM	25.1	23.8	24.9	24.6	19.0	19.7	19.9	19.5
2:55:00 PM	24.0	23.1	24.2	23.8	19.0	19.9	20.1	19.7
2:56:00 PM	24.0	22.9	24.3	23.7	19.0	19.8	20.1	19.6
2:57:00 PM	24.1	22.8	24.5	23.8	19.0	19.8	20.0	19.6
2:58:00 PM	24.3	22.8	24.7	23.9	20.0	19.8	20.0	19.9
2:59:00 PM	24.9	24.3	25.7	25.0	19.0	19.7	19.9	19.5
3:00:00 PM	23.7	22.5	24.0	23.4	19.0	19.6	19.8	19.5
3:01:00 PM	22.4	21.7	23.2	22.4	19.0	19.8	19.8	19.5
3:02:00 PM	23.7	21.8	24.3	23.3	19.0	19.5	19.6	19.4
3:03:00 PM	23.5	23.0	25.1	23.9	19.0	19.5	19.5	19.3
3:04:00 PM	24.5	23.6	25.6	24.6	19.0	19.8	19.9	19.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:05:00 PM	22.5	22.1	23.6	22.7	19.0	19.9	20.0	19.6
3:06:00 PM	23.8	22.8	24.6	23.7	19.0	20.0	20.0	19.7
3:07:00 PM	23.8	22.8	24.7	23.8	19.0	20.0	20.0	19.7
3:08:00 PM	23.5	23.0	24.4	23.6	19.0	20.2	20.2	19.8
3:09:00 PM	23.5	22.6	24.5	23.5	20.0	20.5	20.5	20.3
3:10:00 PM	24.2	23.4	25.2	24.3	20.0	20.3	20.3	20.2
3:11:00 PM	23.5	22.7	24.7	23.6	20.0	20.2	20.2	20.1
3:12:00 PM	24.1	23.5	25.3	24.3	20.0	20.3	20.2	20.2
3:13:00 PM	23.0	22.4	24.4	23.3	20.0	20.2	20.2	20.1
3:14:00 PM	23.5	23.3	25.2	24.0	19.0	20.3	20.3	19.9
3:15:00 PM	24.0	23.1	25.2	24.1	20.0	20.4	20.4	20.3
3:16:00 PM	23.5	22.8	24.7	23.7	20.0	20.4	20.4	20.3
3:17:00 PM	23.1	21.9	24.0	23.0	20.0	20.4	20.4	20.3
3:18:00 PM	23.0	23.0	24.7	23.6	20.0	19.9	20.2	20.0
3:19:00 PM	22.4	22.4	23.9	22.9	20.0	20.4	20.4	20.3
3:20:00 PM	21.4	21.7	22.9	22.0	20.0	20.1	20.1	20.1
3:21:00 PM	21.1	21.4	22.6	21.7	19.0	19.9	20.0	19.6
3:22:00 PM	21.7	21.8	23.0	22.2	19.0	19.6	19.8	19.5
3:23:00 PM	21.6	22.1	23.1	22.3	19.0	19.8	19.8	19.5
3:24:00 PM	23.2	23.4	24.3	23.6	19.0	19.6	19.6	19.4
3:25:00 PM	22.3	22.5	23.7	22.8	19.0	19.6	19.8	19.5
3:26:00 PM	22.9	23.1	24.2	23.4	19.0	19.7	19.9	19.5
3:27:00 PM	21.9	22.2	23.4	22.5	19.0	19.8	20.0	19.6
3:28:00 PM	21.9	22.1	23.1	22.4	19.0	20.1	20.1	19.7
3:29:00 PM	21.7	22.0	23.0	22.2	19.0	20.0	20.0	19.7
3:30:00 PM	21.4	21.6	22.9	22.0	19.0	19.9	20.0	19.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:31:00 PM	21.7	22.1	23.1	22.3	19.0	19.9	20.0	19.6
3:32:00 PM	21.6	21.8	23.0	22.1	19.0	19.9	20.0	19.6
3:33:00 PM	21.3	21.7	22.8	21.9	19.0	19.9	19.9	19.6
3:34:00 PM	21.6	22.0	22.9	22.2	19.0	20.1	20.1	19.7
3:35:00 PM	22.1	22.4	23.4	22.6	19.0	20.1	20.1	19.7
3:36:00 PM	21.8	22.1	23.2	22.4	19.0	20.0	20.0	19.7
3:37:00 PM	22.0	22.0	23.2	22.4	19.0	20.0	20.1	19.7
3:38:00 PM	21.3	21.5	22.7	21.8	19.0	20.1	20.1	19.7
3:39:00 PM	21.4	21.7	22.8	22.0	19.0	19.9	19.9	19.6
3:40:00 PM	21.1	21.4	22.5	21.7	19.0	19.8	19.8	19.5
3:41:00 PM	21.3	21.6	22.8	21.9	19.0	19.8	19.8	19.5
3:42:00 PM	21.8	21.8	23.0	22.2	19.0	20.0	20.1	19.7
3:43:00 PM	22.1	22.1	23.4	22.5	20.0	20.2	20.3	20.2
3:44:00 PM	21.8	22.0	23.2	22.3	20.0	20.2	20.2	20.1
3:45:00 PM	22.6	22.7	24.0	23.1	20.0	20.1	20.1	20.1
3:46:00 PM	22.3	23.0	23.9	23.1	20.0	20.3	20.3	20.2
3:47:00 PM	22.7	23.2	24.2	23.4	20.0	20.4	20.4	20.3
3:48:00 PM	22.6	22.4	23.7	22.9	20.0	20.2	20.3	20.2
3:49:00 PM	22.4	22.5	23.7	22.9	20.0	20.1	20.4	20.2
3:50:00 PM	22.0	22.2	23.2	22.5	20.0	20.2	20.2	20.1
3:51:00 PM	21.8	22.0	23.1	22.3	19.0	20.0	20.1	19.7
3:52:00 PM	21.5	21.7	23.0	22.1	19.0	19.9	20.0	19.6
3:53:00 PM	22.3	22.6	23.6	22.8	19.0	20.1	20.1	19.7
3:54:00 PM	22.0	22.1	23.3	22.5	19.0	20.1	20.1	19.7
3:55:00 PM	22.0	22.1	23.3	22.5	19.0	20.2	20.2	19.8
3:56:00 PM	22.7	22.8	24.1	23.2	20.0	20.2	20.3	20.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:57:00 PM	22.2	22.4	23.5	22.7	20.0	20.5	20.5	20.3
3:58:00 PM	22.4	22.6	23.8	22.9	20.0	20.1	20.3	20.1
3:59:00 PM	21.6	22.0	23.1	22.2	19.0	20.2	20.2	19.8
4:00:00 PM	22.3	22.4	23.5	22.7	20.0	20.2	20.2	20.1
4:01:00 PM	22.3	22.4	23.6	22.8	20.0	20.2	20.3	20.2
4:02:00 PM	21.9	22.1	23.4	22.5	20.0	20.2	20.2	20.1
4:03:00 PM	21.7	22.2	23.2	22.4	19.0	20.0	20.0	19.7
4:04:00 PM	21.5	21.7	22.9	22.0	19.0	20.1	20.1	19.7
4:05:00 PM	22.5	22.6	23.8	23.0	19.0	20.1	20.1	19.7
4:06:00 PM	22.6	22.9	23.9	23.1	19.0	20.1	20.1	19.7
4:07:00 PM	22.5	22.6	23.7	22.9	20.0	20.2	20.2	20.1
4:08:00 PM	21.9	22.1	23.3	22.4	19.0	20.1	20.1	19.7
4:09:00 PM	22.0	22.2	23.3	22.5	20.0	20.2	20.2	20.1
4:10:00 PM	22.4	22.6	23.7	22.9	20.0	20.1	20.2	20.1
4:11:00 PM	22.5	22.4	23.7	22.9	20.0	20.1	20.2	20.1
4:12:00 PM	22.8	22.7	24.1	23.2	20.0	20.2	20.4	20.2
4:13:00 PM	21.6	22.0	23.0	22.2	20.0	20.3	20.3	20.2
4:14:00 PM	21.5	21.9	23.0	22.1	20.0	20.4	20.4	20.3
4:15:00 PM	21.4	21.8	22.8	22.0	19.0	20.2	20.2	19.8
4:16:00 PM	21.8	22.0	23.2	22.3	20.0	20.2	20.2	20.1
4:17:00 PM	21.1	21.3	22.5	21.6	19.0	20.1	20.2	19.8
4:18:00 PM	20.9	21.0	22.3	21.4	19.0	20.0	20.0	19.7
4:19:00 PM	21.4	21.5	22.8	21.9	19.0	19.8	19.9	19.6
4:20:00 PM	22.1	22.2	23.5	22.6	19.0	20.2	20.2	19.8
4:21:00 PM	21.4	21.6	22.9	22.0	19.0	20.0	20.2	19.7
4:22:00 PM	21.4	21.5	22.8	21.9	19.0	20.0	20.0	19.7

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:23:00 PM	21.4	21.6	22.8	21.9	19.0	20.1	20.1	19.7
4:24:00 PM	21.0	21.2	22.5	21.6	20.0	20.1	20.2	20.1
4:25:00 PM	20.9	21.1	22.4	21.5	19.0	20.0	20.0	19.7
4:26:00 PM	20.9	21.3	22.4	21.5	19.0	20.0	20.0	19.7
4:27:00 PM	21.2	21.5	22.7	21.8	19.0	19.9	20.0	19.6
4:28:00 PM	21.4	21.7	23.0	22.0	19.0	20.0	20.0	19.7
4:29:00 PM	21.9	21.8	23.2	22.3	19.0	19.9	19.9	19.6
4:30:00 PM	21.5	21.6	23.0	22.0	19.0	20.0	20.0	19.7
4:31:00 PM	21.2	21.4	22.7	21.8	19.0	20.0	20.0	19.7
4:32:00 PM	21.1	21.2	22.4	21.6	19.0	20.0	20.0	19.7
4:33:00 PM	20.6	20.9	22.0	21.2	19.0	19.9	19.9	19.6
4:34:00 PM	21.0	21.2	22.4	21.5	19.0	19.9	19.9	19.6
4:35:00 PM	20.7	20.7	22.0	21.1	19.0	19.8	19.8	19.5
4:36:00 PM	20.9	21.2	22.2	21.4	19.0	19.6	19.7	19.4
4:37:00 PM	20.8	21.2	22.1	21.4	19.0	19.6	19.7	19.4
4:38:00 PM	20.6	20.9	22.0	21.2	19.0	19.5	19.7	19.4
4:39:00 PM	20.3	20.5	21.5	20.8	19.0	19.8	19.8	19.5
4:40:00 PM	20.3	20.6	21.5	20.8	19.0	19.7	19.7	19.5
4:41:00 PM	20.4	20.6	21.5	20.8	19.0	19.6	19.7	19.4
4:42:00 PM	19.8	20.2	21.2	20.4	19.0	19.6	19.6	19.4
4:43:00 PM	20.0	20.2	21.2	20.5	19.0	19.6	19.6	19.4
4:44:00 PM	20.1	20.3	21.2	20.5	19.0	19.6	19.6	19.4
4:45:00 PM	20.1	20.3	21.2	20.5	19.0	19.6	19.6	19.4
4:46:00 PM	19.9	20.2	21.1	20.4	19.0	19.6	19.6	19.4
4:47:00 PM	19.9	20.3	21.1	20.4	19.0	19.5	19.6	19.4
4:48:00 PM	20.1	20.4	21.1	20.5	19.0	19.3	19.5	19.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:49:00 PM	20.0	20.3	21.1	20.5	19.0	19.3	19.5	19.3
4:50:00 PM	19.6	20.1	20.8	20.2	19.0	19.4	19.4	19.3
4:51:00 PM	19.5	20.0	20.8	20.1	18.0	19.3	19.3	18.9
4:52:00 PM	19.6	20.1	20.9	20.2	18.0	19.2	19.3	18.8
4:53:00 PM	19.6	20.0	20.8	20.1	18.0	19.2	19.3	18.8
4:54:00 PM	19.4	19.8	20.7	20.0	19.0	19.1	19.3	19.1
4:55:00 PM	19.2	19.8	21.2	20.1	18.0	19.1	19.3	18.8
4:56:00 PM	18.5	19.3	20.8	19.5	19.0	19.1	19.3	19.1
4:57:00 PM	18.4	19.2	20.6	19.4	19.0	19.0	19.2	19.1
4:58:00 PM	18.4	19.3	20.7	19.5	19.0	18.9	19.1	19.0
4:59:00 PM	18.4	19.2	20.7	19.4	18.0	18.9	19.1	18.7
5:00:00 PM	18.4	19.3	20.8	19.5	18.0	18.9	19.1	18.7
5:01:00 PM	18.2	19.3	20.7	19.4	18.0	18.8	19.0	18.6
5:02:00 PM	18.3	19.3	20.8	19.5	18.0	18.8	19.0	18.6
5:03:00 PM	18.2	19.2	20.7	19.4	18.0	18.9	19.1	18.7
5:04:00 PM	18.2	19.1	20.6	19.3	18.0	18.9	19.0	18.6
5:05:00 PM	18.1	19.1	20.6	19.3	18.0	18.9	19.0	18.6
5:06:00 PM	18.1	19.2	20.7	19.3	18.0	18.8	18.9	18.6
5:07:00 PM	18.1	19.1	20.5	19.2	18.0	18.7	18.9	18.5
5:08:00 PM	18.0	18.9	20.3	19.1	18.0	18.8	19.0	18.6
5:09:00 PM	17.9	18.8	20.0	18.9	18.0	18.7	18.9	18.5
5:10:00 PM	17.8	18.6	19.9	18.8	18.0	18.7	18.9	18.5
5:11:00 PM	17.8	18.4	19.8	18.7	18.0	18.6	18.8	18.5
5:12:00 PM	17.8	18.4	19.8	18.7	18.0	18.6	18.7	18.4
5:13:00 PM	17.8	18.4	19.8	18.7	18.0	18.6	18.8	18.5
5:14:00 PM	17.8	18.4	19.8	18.7	18.0	18.6	18.7	18.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:15:00 PM	17.7	18.4	19.7	18.6	18.0	18.6	18.7	18.4
5:16:00 PM	17.7	18.3	19.7	18.6	18.0	18.6	18.7	18.4
5:17:00 PM	17.6	18.3	19.6	18.5	18.0	18.5	18.6	18.4
5:18:00 PM	17.6	18.2	19.5	18.4	18.0	18.5	18.6	18.4
5:19:00 PM	17.6	18.2	19.6	18.5	18.0	18.4	18.5	18.3
5:20:00 PM	17.6	18.2	19.6	18.5	18.0	18.3	18.5	18.3
5:21:00 PM	17.5	18.1	19.4	18.3	18.0	18.4	18.5	18.3
5:22:00 PM	17.5	18.1	19.4	18.3	18.0	18.3	18.5	18.3
5:23:00 PM	17.6	18.2	19.5	18.4	18.0	18.3	18.4	18.2
5:24:00 PM	17.5	18.1	19.4	18.3	18.0	18.3	18.4	18.2
5:25:00 PM	17.4	18.0	19.3	18.2	18.0	18.3	18.4	18.2
5:26:00 PM	17.2	17.8	19.1	18.0	18.0	18.3	18.5	18.3
5:27:00 PM	17.2	17.8	19.1	18.0	18.0	18.2	18.4	18.2
5:28:00 PM	17.2	17.8	19.1	18.0	18.0	18.1	18.4	18.2
5:29:00 PM	17.1	17.8	19.1	18.0	17.0	18.1	18.3	17.8
5:30:00 PM	16.9	17.5	18.9	17.8	18.0	18.1	18.3	18.1
5:31:00 PM	17.1	17.8	19.0	18.0	17.0	18.1	18.2	17.8
5:32:00 PM	17.0	17.8	18.9	17.9	18.0	18.0	18.2	18.1
5:33:00 PM	16.9	17.5	18.9	17.8	17.0	18.1	18.2	17.8
5:34:00 PM	16.9	17.5	18.8	17.7	17.0	18.0	18.2	17.7
5:35:00 PM	16.8	17.6	18.8	17.7	18.0	18.0	18.2	18.1
5:36:00 PM	16.6	17.4	18.6	17.5	17.0	18.0	18.2	17.7
5:37:00 PM	16.6	17.3	18.5	17.5	17.0	18.1	18.1	17.7
5:38:00 PM	16.5	17.2	18.5	17.4	17.0	18.1	18.1	17.7
5:39:00 PM	16.5	17.3	18.5	17.4	17.0	17.9	18.1	17.7
5:40:00 PM	16.3	17.0	18.2	17.2	17.0	17.8	18.0	17.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:41:00 PM	16.1	16.6	17.9	16.9	17.0	18.0	17.9	17.6
5:42:00 PM	16.1	16.7	18.0	16.9	17.0	17.8	17.8	17.5
5:43:00 PM	16.5	17.1	18.4	17.3	17.0	17.7	17.7	17.5
5:44:00 PM	16.5	17.1	18.4	17.3	17.0	17.7	17.7	17.5
5:45:00 PM	16.5	17.1	18.4	17.3	17.0	17.5	17.7	17.4
5:46:00 PM	16.5	17.1	18.4	17.3	17.0	17.7	17.8	17.5
5:47:00 PM	16.4	17.0	18.4	17.3	17.0	17.6	17.8	17.5
5:48:00 PM	16.5	17.1	18.4	17.3	17.0	17.7	17.7	17.5
5:49:00 PM	16.4	17.0	18.4	17.3	17.0	17.6	17.8	17.5
5:50:00 PM	16.4	17.0	18.3	17.2	17.0	17.8	17.7	17.5
5:51:00 PM	16.3	17.0	18.3	17.2	17.0	17.5	17.7	17.4
5:52:00 PM	16.2	16.7	18.2	17.0	17.0	17.7	17.7	17.5
5:53:00 PM	16.3	16.9	18.3	17.2	17.0	17.4	17.6	17.3
5:54:00 PM	16.4	17.0	18.3	17.2	17.0	17.6	17.6	17.4
5:55:00 PM	16.5	17.0	18.4	17.3	17.0	17.6	17.6	17.4
5:56:00 PM	16.2	16.9	18.2	17.1	17.0	17.6	17.6	17.4
5:57:00 PM	15.9	16.6	18.0	16.8	17.0	17.5	17.7	17.4
5:58:00 PM	15.9	16.6	17.9	16.8	17.0	17.5	17.6	17.4
5:59:00 PM	16.1	16.7	18.1	17.0	17.0	17.4	17.6	17.3
6:00:00 PM	16.1	16.7	18.1	17.0	17.0	17.5	17.7	17.4
6:01:00 PM	16.1	16.8	18.1	17.0	17.0	17.6	17.6	17.4
6:02:00 PM	15.9	16.6	18.0	16.8	17.0	17.7	17.6	17.4
6:03:00 PM	15.9	16.5	17.9	16.8	17.0	17.6	17.6	17.4
6:04:00 PM	15.7	16.4	17.7	16.6	17.0	17.4	17.6	17.3
6:05:00 PM	15.5	16.2	17.5	16.4	17.0	17.5	17.5	17.3
6:06:00 PM	15.3	15.9	17.3	16.2	17.0	17.4	17.4	17.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:07:00 PM	15.2	15.9	17.3	16.1	17.0	17.3	17.3	17.2
6:08:00 PM	15.4	16.1	17.5	16.3	17.0	17.3	17.2	17.2
6:09:00 PM	15.3	15.9	17.4	16.2	17.0	17.1	17.1	17.1
6:10:00 PM	14.8	15.4	16.8	15.7	16.0	16.8	17.0	16.6
6:11:00 PM	14.5	15.1	16.5	15.4	16.0	16.8	16.8	16.5
6:12:00 PM	14.3	15.2	16.4	15.3	16.0	16.8	16.7	16.5
6:13:00 PM	14.3	15.2	16.4	15.3	16.0	16.8	16.7	16.5
6:14:00 PM	14.4	15.1	16.3	15.3	16.0	16.7	16.7	16.5
6:15:00 PM	14.3	14.9	16.1	15.1	16.0	16.6	16.5	16.4
6:16:00 PM	14.0	14.6	15.9	14.8	16.0	16.6	16.5	16.4
6:17:00 PM	13.9	14.5	15.8	14.7	16.0	16.7	16.6	16.4
6:18:00 PM	14.0	14.7	15.9	14.9	16.0	16.7	16.6	16.4
6:19:00 PM	13.9	14.7	15.9	14.8	16.0	16.8	16.7	16.5
6:20:00 PM	14.0	14.8	16.1	15.0	16.0	16.9	16.8	16.6
6:21:00 PM	14.1	14.8	16.0	15.0	17.0	16.9	16.8	16.9
6:22:00 PM	13.9	14.7	16.0	14.9	17.0	16.9	16.9	16.9
6:23:00 PM	13.9	14.5	15.8	14.7	16.0	16.8	16.8	16.5
6:24:00 PM	13.9	14.5	15.8	14.7	16.0	16.8	16.8	16.5
6:25:00 PM	13.9	14.7	15.9	14.8	16.0	16.8	16.7	16.5
6:26:00 PM	13.7	14.5	15.7	14.6	16.0	16.9	16.8	16.6
6:27:00 PM	13.9	14.6	15.8	14.8	17.0	16.9	16.9	16.9
6:28:00 PM	13.9	14.6	15.9	14.8	16.0	16.8	16.8	16.5
6:29:00 PM	14.0	14.6	15.9	14.8	16.0	16.5	16.3	16.3
6:30:00 PM	14.1	15.0	16.2	15.1	16.0	16.4	16.5	16.3
6:31:00 PM	13.8	14.5	15.8	14.7	16.0	16.5	16.5	16.3
6:32:00 PM	13.7	14.5	15.6	14.6	16.0	16.5	16.5	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:33:00 PM	13.7	14.6	15.8	14.7	16.0	16.5	16.5	16.3
6:34:00 PM	13.7	14.5	15.7	14.6	16.0	16.5	16.6	16.4
6:35:00 PM	13.7	14.3	15.6	14.5	16.0	16.6	16.6	16.4
6:36:00 PM	13.6	14.2	15.5	14.4	16.0	16.5	16.5	16.3
6:37:00 PM	13.6	14.5	15.6	14.6	16.0	16.6	16.6	16.4
6:38:00 PM	13.8	14.4	15.7	14.6	16.0	16.5	16.5	16.3
6:39:00 PM	13.6	14.3	15.4	14.4	16.0	16.3	16.2	16.2
6:40:00 PM	13.6	14.3	15.5	14.5	16.0	16.4	16.4	16.3
6:41:00 PM	13.8	14.5	15.7	14.7	16.0	16.0	16.1	16.0
6:42:00 PM	13.6	14.3	15.6	14.5	16.0	16.1	16.2	16.1
6:43:00 PM	13.4	14.2	15.5	14.4	16.0	16.3	16.3	16.2
6:44:00 PM	13.3	14.1	15.3	14.2	16.0	16.4	16.4	16.3
6:45:00 PM	13.2	14.1	15.3	14.2	16.0	16.3	16.3	16.2
6:46:00 PM	13.4	14.1	15.2	14.2	16.0	16.1	16.2	16.1
6:47:00 PM	13.7	14.3	15.5	14.5	16.0	16.0	15.8	15.9
6:48:00 PM	13.6	14.4	15.5	14.5	16.0	16.1	16.0	16.0
6:49:00 PM	13.2	14.0	15.2	14.1	16.0	16.2	16.2	16.1
6:50:00 PM	13.2	13.9	15.0	14.0	16.0	16.3	16.3	16.2
6:51:00 PM	13.3	13.9	15.2	14.1	16.0	16.3	16.3	16.2
6:52:00 PM	13.1	14.0	15.1	14.1	16.0	16.3	16.3	16.2
6:53:00 PM	12.9	13.6	14.9	13.8	16.0	16.5	16.4	16.3
6:54:00 PM	13.2	14.1	15.1	14.1	16.0	16.4	16.5	16.3
6:55:00 PM	12.9	13.8	15.0	13.9	16.0	16.4	16.4	16.3
6:56:00 PM	12.9	13.8	15.0	13.9	16.0	16.3	16.4	16.2
6:57:00 PM	13.1	14.0	15.2	14.1	16.0	16.2	16.3	16.2
6:58:00 PM	12.9	13.8	15.0	13.9	16.0	16.0	16.1	16.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:59:00 PM	12.9	13.8	14.9	13.9	16.0	15.7	15.7	15.8
7:00:00 PM	13.3	14.0	15.1	14.1	15.0	15.3	15.5	15.3
7:00:00 PM	12.8	13.6	14.9	13.8	15.0	15.6	15.6	15.4
7:01:00 PM	12.9	13.6	15.0	13.8	16.0	15.6	15.4	15.7
7:02:00 PM	12.8	13.6	14.8	13.7	16.0	15.7	15.5	15.7
7:03:00 PM	12.7	13.6	14.6	13.6	15.0	15.8	15.8	15.5
7:04:00 PM	12.6	13.5	14.5	13.5	15.0	15.9	15.9	15.6
7:05:00 PM	12.6	13.5	14.5	13.5	16.0	16.1	16.0	16.0
7:06:00 PM	12.6	13.5	14.6	13.6	16.0	16.1	16.1	16.1
7:07:00 PM	12.6	13.4	14.7	13.6	16.0	16.2	16.2	16.1
7:08:00 PM	12.8	13.6	14.8	13.7	16.0	16.1	16.1	16.1
7:09:00 PM	12.5	13.2	14.6	13.4	16.0	16.1	16.1	16.1
7:10:00 PM	12.8	13.8	14.7	13.8	16.0	15.9	15.9	15.9
7:11:00 PM	12.9	13.9	14.7	13.8	15.0	15.6	15.6	15.4
7:12:00 PM	12.8	13.6	14.7	13.7	15.0	15.6	15.7	15.4
7:13:00 PM	12.8	13.5	14.9	13.7	15.0	15.7	15.8	15.5
7:14:00 PM	12.7	13.4	14.7	13.6	15.0	15.7	15.7	15.5
7:15:00 PM	12.6	13.4	14.6	13.5	15.0	15.5	15.6	15.4
7:16:00 PM	12.6	13.3	14.6	13.5	15.0	15.5	15.5	15.3
7:17:00 PM	12.6	13.3	14.6	13.5	15.0	15.3	15.4	15.2
7:18:00 PM	12.4	13.2	14.3	13.3	15.0	15.2	15.3	15.2
7:19:00 PM	12.4	13.2	14.4	13.3	15.0	15.3	15.4	15.2
7:20:00 PM	12.6	13.3	14.7	13.5	15.0	15.1	15.0	15.0
7:21:00 PM	12.6	13.3	14.7	13.5	15.0	15.0	15.1	15.0
7:22:00 PM	12.6	13.3	14.6	13.5	15.0	15.1	15.2	15.1
7:23:00 PM	12.4	13.2	14.4	13.3	15.0	15.0	15.1	15.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:24:00 PM	12.4	13.2	14.4	13.3	15.0	15.1	15.2	15.1
7:25:00 PM	12.4	13.1	14.3	13.3	15.0	15.1	15.2	15.1
7:26:00 PM	12.3	13.2	14.2	13.2	15.0	15.2	15.2	15.1
7:27:00 PM	12.3	13.1	14.3	13.2	15.0	15.3	15.3	15.2
7:28:00 PM	12.2	13.0	14.3	13.2	15.0	15.3	15.2	15.2
7:29:00 PM	12.3	13.0	14.3	13.2	15.0	15.3	15.1	15.1
7:30:00 PM	12.3	13.1	14.3	13.2	15.0	15.0	15.1	15.0
7:31:00 PM	12.3	12.9	14.3	13.2	15.0	15.0	15.1	15.0
7:32:00 PM	12.5	13.1	14.5	13.4	15.0	15.2	15.0	15.1
7:33:00 PM	12.4	13.1	14.5	13.3	15.0	15.0	15.1	15.0
7:34:00 PM	12.5	13.1	14.5	13.4	15.0	15.3	15.3	15.2
7:35:00 PM	12.3	12.8	14.3	13.1	15.0	15.5	15.4	15.3
7:36:00 PM	12.0	12.6	14.0	12.9	15.0	15.7	15.6	15.4
7:37:00 PM	11.9	12.6	14.0	12.8	15.0	15.8	15.8	15.5
7:38:00 PM	12.2	12.9	14.3	13.1	15.0	16.1	15.9	15.7
7:39:00 PM	12.1	12.8	14.2	13.0	15.0	16.1	15.9	15.7
7:40:00 PM	12.2	12.9	14.2	13.1	15.0	16.2	16.0	15.7
7:41:00 PM	12.2	12.8	14.2	13.1	15.0	16.2	16.0	15.7
7:42:00 PM	12.0	12.7	14.2	13.0	16.0	16.1	16.1	16.1
7:43:00 PM	12.2	12.8	14.2	13.1	16.0	16.3	16.1	16.1
7:44:00 PM	12.2	12.8	14.3	13.1	15.0	15.9	15.9	15.6
7:45:00 PM	12.0	12.6	14.1	12.9	15.0	15.9	15.8	15.6
7:46:00 PM	12.1	12.8	14.2	13.0	15.0	15.8	15.7	15.5
7:47:00 PM	12.2	12.9	14.3	13.1	15.0	15.8	15.8	15.5
7:48:00 PM	12.2	12.9	14.2	13.1	15.0	15.8	15.8	15.5
7:49:00 PM	12.0	12.8	13.9	12.9	15.0	15.7	15.6	15.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:50:00 PM	12.0	12.8	13.8	12.9	15.0	15.5	15.5	15.3
7:51:00 PM	12.1	13.0	14.0	13.0	15.0	15.4	15.4	15.3
7:52:00 PM	12.3	13.0	14.2	13.2	15.0	15.5	15.4	15.3
7:53:00 PM	12.1	12.8	14.2	13.0	15.0	15.5	15.3	15.3
7:54:00 PM	12.1	12.8	14.1	13.0	15.0	15.0	15.0	15.0
7:55:00 PM	11.9	12.5	13.9	12.8	15.0	15.1	15.0	15.0
7:56:00 PM	12.0	12.6	14.0	12.9	15.0	15.0	14.8	14.9
7:57:00 PM	12.0	12.7	14.1	12.9	15.0	14.9	14.9	14.9
7:58:00 PM	12.0	12.7	14.1	12.9	15.0	15.0	14.9	15.0
7:59:00 PM	12.1	12.8	14.1	13.0	15.0	15.0	15.1	15.0
8:00:00 PM	12.4	12.8	14.2	13.1	15.0	15.3	15.3	15.2
8:01:00 PM	12.2	12.8	14.2	13.1	15.0	15.4	15.4	15.3
8:02:00 PM	12.2	12.8	14.1	13.0	15.0	15.0	14.9	15.0
8:03:00 PM	12.0	12.6	13.9	12.8	14.0	14.9	14.8	14.6
8:04:00 PM	12.0	12.7	14.0	12.9	15.0	14.9	15.0	15.0
8:05:00 PM	12.0	12.8	14.1	13.0	14.0	14.9	15.0	14.6
8:06:00 PM	11.9	12.6	14.1	12.9	15.0	15.1	15.1	15.1
8:07:00 PM	11.8	12.4	13.8	12.7	15.0	15.3	15.1	15.1
8:08:00 PM	12.1	12.6	14.1	12.9	15.0	15.0	14.9	15.0
8:09:00 PM	12.0	12.7	14.1	12.9	15.0	15.0	14.8	14.9
8:10:00 PM	12.1	12.7	14.2	13.0	14.0	14.4	14.5	14.3
8:11:00 PM	12.2	12.8	14.2	13.1	14.0	14.6	14.6	14.4
8:12:00 PM	12.2	12.8	14.3	13.1	14.0	14.6	14.7	14.4
8:13:00 PM	12.2	12.8	14.2	13.1	14.0	14.7	14.6	14.4
8:14:00 PM	12.2	12.8	14.2	13.1	14.0	14.6	14.6	14.4
8:15:00 PM	12.2	12.8	14.2	13.1	14.0	14.8	14.7	14.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:16:00 PM	12.1	12.8	14.1	13.0	14.0	14.7	14.7	14.5
8:17:00 PM	12.2	12.7	14.2	13.0	14.0	14.9	14.7	14.5
8:18:00 PM	12.4	13.0	14.3	13.2	14.0	14.7	14.7	14.5
8:19:00 PM	12.2	12.8	14.3	13.1	14.0	14.6	14.4	14.3
8:20:00 PM	12.2	12.8	14.2	13.1	14.0	14.7	14.8	14.5
8:21:00 PM	12.2	12.9	14.1	13.1	15.0	15.1	15.0	15.0
8:22:00 PM	12.3	12.9	14.3	13.2	15.0	15.0	15.1	15.0
8:23:00 PM	12.2	12.8	14.1	13.0	15.0	15.3	15.1	15.1
8:24:00 PM	12.2	13.0	14.2	13.1	15.0	15.3	15.2	15.2
8:25:00 PM	12.1	12.8	14.2	13.0	15.0	15.2	15.2	15.1
8:26:00 PM	12.1	12.7	14.1	13.0	15.0	15.2	15.3	15.2
8:27:00 PM	12.2	12.9	14.1	13.1	15.0	15.4	15.2	15.2
8:28:00 PM	12.2	12.9	14.3	13.1	15.0	15.4	15.3	15.2
8:29:00 PM	12.1	12.8	14.2	13.0	15.0	15.5	15.5	15.3
8:30:00 PM	12.2	12.8	14.2	13.1	15.0	15.7	15.6	15.4
8:31:00 PM	12.1	12.7	14.1	13.0	15.0	15.5	15.5	15.3
8:32:00 PM	12.1	12.7	14.1	13.0	15.0	15.5	15.2	15.2
8:33:00 PM	12.0	12.6	14.1	12.9	15.0	15.0	14.9	15.0
8:34:00 PM	12.0	12.6	14.1	12.9	15.0	14.7	14.8	14.8
8:35:00 PM	12.0	12.6	14.0	12.9	14.0	14.5	14.6	14.4
8:36:00 PM	11.8	12.4	13.7	12.6	14.0	14.6	14.5	14.4
8:37:00 PM	11.8	12.4	13.7	12.6	14.0	14.7	14.6	14.4
8:38:00 PM	11.7	12.3	13.6	12.5	14.0	14.6	14.6	14.4
8:39:00 PM	11.7	12.3	13.6	12.5	14.0	14.3	14.5	14.3
8:40:00 PM	11.6	12.2	13.5	12.4	14.0	14.5	14.4	14.3
8:41:00 PM	11.7	12.3	13.7	12.6	14.0	14.4	14.4	14.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:42:00 PM	11.6	12.2	13.7	12.5	14.0	14.4	14.5	14.3
8:43:00 PM	11.8	12.3	13.8	12.6	14.0	14.3	14.3	14.2
8:44:00 PM	11.8	12.4	13.8	12.7	14.0	14.3	14.3	14.2
8:45:00 PM	11.6	12.2	13.6	12.5	14.0	14.5	14.4	14.3
8:46:00 PM	11.7	12.3	13.7	12.6	14.0	14.4	14.4	14.3
8:47:00 PM	11.7	12.3	13.7	12.6	14.0	14.3	14.4	14.2
8:48:00 PM	11.6	12.3	13.6	12.5	14.0	14.6	14.6	14.4
8:49:00 PM	11.6	12.1	13.5	12.4	14.0	14.7	14.7	14.5
8:50:00 PM	11.6	12.2	13.6	12.5	14.0	14.8	14.8	14.5
8:51:00 PM	11.7	12.3	13.7	12.6	14.0	14.8	14.8	14.5
8:52:00 PM	11.7	12.3	13.7	12.6	15.0	14.8	14.8	14.9
8:53:00 PM	11.5	12.0	13.5	12.3	15.0	14.8	14.8	14.9
8:54:00 PM	11.7	12.3	13.8	12.6	15.0	14.9	14.9	14.9
8:55:00 PM	11.6	12.3	13.7	12.5	15.0	14.9	14.8	14.9
8:56:00 PM	11.9	12.5	14.0	12.8	14.0	14.8	14.8	14.5
8:57:00 PM	11.9	12.5	13.9	12.8	14.0	14.8	14.7	14.5
8:58:00 PM	11.6	12.1	13.6	12.4	14.0	14.7	14.6	14.4
8:59:00 PM	11.5	12.2	13.6	12.4	14.0	14.6	14.5	14.4
9:00:00 PM	11.7	12.3	13.8	12.6	14.0	14.4	14.3	14.2
9:01:00 PM	11.9	12.6	14.1	12.9	14.0	14.2	14.3	14.2
9:02:00 PM	11.7	12.3	13.8	12.6	14.0	14.4	14.4	14.3
9:03:00 PM	11.6	12.2	13.7	12.5	14.0	14.2	14.3	14.2
9:04:00 PM	11.8	12.2	13.7	12.6	13.0	13.7	13.9	13.5
9:05:00 PM	11.6	12.2	13.6	12.5	13.0	13.8	13.9	13.6
9:06:00 PM	11.6	12.1	13.6	12.4	13.0	13.9	14.0	13.6
9:07:00 PM	11.0	11.6	13.1	11.9	13.0	14.1	14.2	13.8

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:08:00 PM	11.0	11.7	13.0	11.9	14.0	14.2	14.2	14.1
9:09:00 PM	11.1	11.7	13.1	12.0	14.0	14.4	14.4	14.3
9:10:00 PM	11.1	11.8	13.1	12.0	14.0	14.6	14.6	14.4
9:11:00 PM	11.3	11.8	13.3	12.1	14.0	14.5	14.5	14.3
9:12:00 PM	11.4	12.0	13.4	12.3	14.0	14.5	14.4	14.3
9:13:00 PM	11.4	12.0	13.4	12.3	14.0	14.5	14.5	14.3
9:14:00 PM	11.3	11.9	13.3	12.2	14.0	14.7	14.7	14.5
9:15:00 PM	10.9	11.6	12.9	11.8	14.0	14.7	14.7	14.5
9:16:00 PM	10.9	11.6	12.7	11.7	14.0	13.9	14.1	14.0
9:17:00 PM	10.7	11.4	12.6	11.6	13.0	13.9	13.9	13.6
9:18:00 PM	10.6	11.6	12.6	11.6	13.0	13.9	13.9	13.6
9:19:00 PM	10.4	11.3	12.5	11.4	13.0	13.9	14.0	13.6
9:20:00 PM	10.6	11.3	12.6	11.5	13.0	13.6	13.7	13.4
9:21:00 PM	10.3	11.0	12.3	11.2	13.0	13.5	13.6	13.4
9:22:00 PM	10.1	10.8	12.1	11.0	13.0	13.3	13.5	13.3
9:23:00 PM	10.3	11.0	12.3	11.2	13.0	13.4	13.5	13.3
9:24:00 PM	10.5	11.3	12.3	11.4	13.0	13.3	13.4	13.2
9:25:00 PM	10.7	11.4	12.6	11.6	13.0	13.3	13.3	13.2
9:26:00 PM	10.7	11.5	12.6	11.6	13.0	13.4	13.4	13.3
9:27:00 PM	10.8	11.5	12.6	11.6	13.0	13.5	13.5	13.3
9:28:00 PM	10.6	11.2	12.6	11.5	13.0	13.6	13.6	13.4
9:29:00 PM	10.5	11.1	12.5	11.4	13.0	13.4	13.4	13.3
9:30:00 PM	10.5	11.2	12.4	11.4	13.0	13.3	13.3	13.2
9:31:00 PM	10.5	11.2	12.3	11.3	13.0	13.4	13.5	13.3
9:32:00 PM	10.6	11.4	12.5	11.5	13.0	13.5	13.7	13.4
9:33:00 PM	10.5	11.2	12.4	11.4	13.0	13.6	13.7	13.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:34:00 PM	10.4	11.2	12.4	11.3	13.0	13.5	13.6	13.4
9:35:00 PM	10.8	11.5	12.6	11.6	13.0	13.5	13.6	13.4
9:36:00 PM	10.6	11.2	12.5	11.4	13.0	13.6	13.6	13.4
9:37:00 PM	10.7	11.4	12.6	11.6	13.0	13.7	13.7	13.5
9:38:00 PM	10.7	11.3	12.7	11.6	13.0	13.7	13.6	13.4
9:39:00 PM	10.5	11.0	12.5	11.3	13.0	13.6	13.6	13.4
9:40:00 PM	10.3	10.9	12.3	11.2	13.0	13.4	13.4	13.3
9:41:00 PM	10.4	11.0	12.3	11.2	13.0	13.4	13.4	13.3
9:42:00 PM	10.5	11.1	12.4	11.3	13.0	13.3	13.4	13.2
9:43:00 PM	10.5	10.9	12.4	11.3	13.0	13.3	13.4	13.2
9:44:00 PM	10.6	11.0	12.5	11.4	13.0	13.4	13.4	13.3
9:45:00 PM	10.4	10.9	12.4	11.2	13.0	13.3	13.4	13.2
9:46:00 PM	10.4	11.1	12.4	11.3	13.0	13.3	13.3	13.2
9:47:00 PM	10.7	11.3	12.7	11.6	13.0	13.4	13.5	13.3
9:48:00 PM	10.7	11.1	12.7	11.5	13.0	13.4	13.5	13.3
9:49:00 PM	10.7	11.2	12.7	11.5	13.0	13.4	13.5	13.3
9:50:00 PM	11.1	11.6	13.1	11.9	13.0	13.4	13.5	13.3
9:51:00 PM	11.3	11.8	13.3	12.1	13.0	13.5	13.5	13.3
9:52:00 PM	11.7	12.3	13.7	12.6	13.0	13.5	13.5	13.3
9:53:00 PM	11.8	12.4	13.8	12.7	13.0	13.5	13.6	13.4
9:54:00 PM	12.0	12.7	14.0	12.9	13.0	13.7	13.7	13.5
9:55:00 PM	11.8	12.4	13.8	12.7	13.0	13.7	13.9	13.5
9:56:00 PM	11.6	12.1	13.6	12.4	13.0	13.8	13.9	13.6
9:57:00 PM	11.4	11.9	13.4	12.2	13.0	13.7	13.7	13.5
9:58:00 PM	11.4	11.9	13.5	12.3	13.0	13.6	13.6	13.4
9:59:00 PM	11.4	12.0	13.5	12.3	13.0	13.6	13.6	13.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:00:00 PM	11.8	12.3	13.8	12.6	13.0	13.5	13.6	13.4
10:01:00 PM	11.8	12.3	13.9	12.7	13.0	13.5	13.6	13.4
10:02:00 PM	11.8	12.4	13.9	12.7	13.0	13.5	13.6	13.4
10:03:00 PM	11.8	12.4	13.8	12.7	13.0	13.6	13.7	13.4
10:04:00 PM	11.9	12.4	13.9	12.7	13.0	13.7	13.8	13.5
10:05:00 PM	11.9	12.4	13.9	12.7	13.0	13.8	13.9	13.6
10:06:00 PM	11.7	12.2	13.7	12.5	13.0	13.7	13.8	13.5
10:07:00 PM	11.5	12.0	13.6	12.4	13.0	13.8	13.8	13.5
10:08:00 PM	11.6	12.1	13.6	12.4	13.0	13.9	13.9	13.6
10:09:00 PM	11.6	12.2	13.7	12.5	13.0	13.8	13.8	13.5
10:10:00 PM	11.7	12.3	13.8	12.6	13.0	13.7	13.8	13.5
10:11:00 PM	11.8	12.4	13.8	12.7	13.0	13.8	13.8	13.5
10:12:00 PM	11.7	12.2	13.7	12.5	13.0	13.8	13.9	13.6
10:13:00 PM	11.7	12.3	13.7	12.6	13.0	13.8	13.9	13.6
10:14:00 PM	11.8	12.4	13.8	12.7	13.0	13.8	13.8	13.5
10:15:00 PM	11.6	12.2	13.7	12.5	13.0	13.9	13.9	13.6
10:16:00 PM	11.6	12.1	13.6	12.4	13.0	13.8	13.8	13.5
10:17:00 PM	11.7	12.3	13.7	12.6	13.0	13.8	13.8	13.5
10:18:00 PM	11.8	12.3	13.8	12.6	13.0	13.8	13.9	13.6
10:19:00 PM	11.6	12.1	13.6	12.4	13.0	13.7	13.8	13.5
10:20:00 PM	11.8	12.3	13.7	12.6	13.0	13.7	13.9	13.5
10:21:00 PM	11.7	12.3	13.8	12.6	13.0	13.8	13.9	13.6
10:22:00 PM	11.6	12.1	13.7	12.5	13.0	13.8	13.9	13.6
10:23:00 PM	11.7	12.2	13.7	12.5	13.0	13.7	13.8	13.5
10:24:00 PM	11.6	12.1	13.5	12.4	13.0	13.7	13.8	13.5
10:25:00 PM	11.7	12.2	13.7	12.5	13.0	13.7	13.9	13.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:26:00 PM	11.7	12.2	13.7	12.5	13.0	13.7	13.8	13.5
10:27:00 PM	11.6	12.1	13.5	12.4	13.0	13.8	13.9	13.6
10:28:00 PM	11.6	12.2	13.6	12.5	13.0	13.9	13.9	13.6
10:29:00 PM	11.5	12.0	13.5	12.3	13.0	13.8	13.9	13.6
10:30:00 PM	11.4	12.0	13.4	12.3	13.0	13.8	13.9	13.6
10:31:00 PM	11.2	11.8	13.3	12.1	13.0	13.8	13.9	13.6
10:32:00 PM	11.4	12.0	13.3	12.2	13.0	13.8	13.9	13.6
10:33:00 PM	11.5	12.1	13.5	12.4	13.0	13.9	13.9	13.6
10:34:00 PM	11.6	12.2	13.7	12.5	13.0	13.9	13.9	13.6
10:35:00 PM	11.6	12.1	13.6	12.4	13.0	13.8	13.9	13.6
10:36:00 PM	11.5	12.0	13.5	12.3	13.0	13.9	13.9	13.6
10:37:00 PM	11.6	12.2	13.5	12.4	13.0	13.9	13.9	13.6
10:38:00 PM	11.6	12.2	13.6	12.5	13.0	13.9	13.9	13.6
10:39:00 PM	11.6	12.2	13.5	12.4	13	13.9	14	13.6
10:40:00 PM	11.6	12.2	13.6	12.5	13	14	14.1	13.7
10:41:00 PM	11.5	12.1	13.5	12.4	14	14.2	14.2	14.1
10:42:00 PM	11.4	12	13.5	12.3	14	14.2	14.3	14.2
10:43:00 PM	11.5	12.1	13.5	12.4	13	13.9	13.8	13.6
10:44:00 PM	11.6	12.2	13.5	12.4	13	13.8	13.9	13.6
10:45:00 PM	11.4	11.9	13.4	12.2	13	13.8	13.9	13.6
10:46:00 PM	11.1	11.6	13.1	11.9	13	13.9	13.9	13.6
10:47:00 PM	11.3	12.1	13.3	12.2	13	13.9	13.9	13.6
10:48:00 PM	11.4	12	13.4	12.3	13	13.8	13.9	13.6
10:49:00 PM	11.4	12	13.4	12.3	13	13.8	13.9	13.6
10:50:00 PM	11.4	12	13.4	12.3	13	13.7	13.9	13.5
10:51:00 PM	11.3	12	13.3	12.2	13	13.7	13.9	13.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:52:00 PM	11.2	11.9	13.2	12.1	13	13.7	13.9	13.5
10:53:00 PM	11.4	12	13.4	12.3	13	13.8	13.8	13.5
10:54:00 PM	11.3	11.8	13.3	12.1	13	13.7	13.7	13.5
10:55:00 PM	11.4	11.8	13.3	12.2	13	13.8	13.9	13.6
10:56:00 PM	11.4	11.9	13.4	12.2	13	13.9	14	13.6
10:57:00 PM	11.7	12.1	13.7	12.5	13	14	14	13.7
10:58:00 PM	11.6	12.1	13.6	12.4	13	14.1	14.1	13.7
10:59:00 PM	11.5	12.1	13.5	12.4	13	14.1	14.1	13.7
11:00:00 PM	11.4	12	13.4	12.3	13	14.1	14.1	13.7
11:01:00 PM	11.4	11.9	13.4	12.2	13	13.7	13.7	13.5
11:02:00 PM	11.4	12	13.5	12.3	13	13.5	13.5	13.3
11:03:00 PM	11.2	11.7	13.2	12	13	13.1	13.2	13.1
11:04:00 PM	11	11.5	13	11.8	13	12.7	12.8	12.8
11:05:00 PM	11.2	11.7	13.2	12	13	12.9	12.9	12.9
11:06:00 PM	11.2	11.7	13.2	12	13	13.1	13.1	13.1
11:07:00 PM	11	11.5	13.1	11.9	13	13	13	13
11:08:00 PM	11	11.6	13.1	11.9	12	12.8	12.8	12.5
11:09:00 PM	11.1	11.6	13.1	11.9	12	12.8	12.8	12.5
11:10:00 PM	11	11.5	13.1	11.9	12	12.7	12.8	12.5
11:11:00 PM	11.2	11.7	13.2	12	12	12.9	12.9	12.6
11:12:00 PM	11.2	11.6	13.1	12	13	13.1	13	13
11:13:00 PM	11.3	11.7	13.3	12.1	13	13	13	13
11:14:00 PM	11.2	11.7	13.2	12	13	13.1	13.1	13.1
11:15:00 PM	11.2	11.7	13.3	12.1	13	12.9	12.9	12.9
11:16:00 PM	11.4	11.9	13.4	12.2	12	12.8	13	12.6
11:17:00 PM	11.2	11.7	13.2	12	13	13.1	13.1	13.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:18:00 PM	11.2	11.6	13.1	12	13	13.2	13.1	13.1
11:19:00 PM	11	11.6	13.1	11.9	13	13.1	13	13
11:20:00 PM	11.1	11.6	13.1	11.9	13	13.1	13.1	13.1
11:21:00 PM	11.2	11.6	13.1	12	13	13	13.1	13
11:22:00 PM	11.4	11.8	13.3	12.2	12	12.7	12.8	12.5
11:23:00 PM	11.6	11.9	13.5	12.3	12	12.8	12.9	12.6
11:24:00 PM	11.6	12	13.5	12.4	13	13	12.9	13
11:25:00 PM	11.6	12.2	13.7	12.5	13	13.2	13.1	13.1
11:26:00 PM	11.5	12	13.5	12.3	13	13.2	13.2	13.1
11:27:00 PM	11.5	12.1	13.5	12.4	13	13.2	13.3	13.2
11:28:00 PM	11.5	12	13.5	12.3	13	13.3	13.3	13.2
11:29:00 PM	10.9	11.4	12.9	11.7	13	13.1	13.1	13.1
11:30:00 PM	10.8	11.4	12.8	11.7	13	13	13.1	13
11:31:00 PM	10.8	11.3	12.8	11.6	13	13.1	13.2	13.1
11:32:00 PM	10.6	11.3	12.6	11.5	13	12.9	13	13
11:33:00 PM	10.7	11.3	12.7	11.6	12	12.9	13	12.6
11:34:00 PM	10.8	11.4	12.8	11.7	13	13.1	13	13
11:35:00 PM	11	11.6	13.1	11.9	13	13.1	13.1	13.1
11:36:00 PM	10.5	11	12.5	11.3	13	13	13	13
11:37:00 PM	10.5	11.2	12.6	11.4	12	12.8	12.9	12.6
11:38:00 PM	10.4	11	12.5	11.3	13	13	12.8	12.9
11:39:00 PM	10.4	11	12.4	11.3	12	13	12.9	12.6
11:40:00 PM	10.4	11.1	12.4	11.3	12	13	12.8	12.6
11:41:00 PM	10.5	11.1	12.5	11.4	13	13.3	13.2	13.2
11:42:00 PM	10.5	11.2	12.4	11.4	13	13.2	13.2	13.1
11:43:00 PM	10.6	11.2	12.5	11.4	13	13.1	13	13

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:44:00 PM	10.7	11.4	12.6	11.6	13	13	13	13
11:45:00 PM	10.7	11.3	12.7	11.6	13	13.1	13.1	13.1
11:46:00 PM	10.4	11	12.4	11.3	13	13.1	13.1	13.1
11:47:00 PM	10.1	10.6	12	10.9	13	13.1	13	13
11:48:00 PM	10.1	10.7	12.1	11	13	13.2	12.8	13
11:49:00 PM	10.2	10.8	12.2	11.1	12	12.9	12.6	12.5
11:50:00 PM	10.3	11	12.3	11.2	12	12.7	12.6	12.4
11:51:00 PM	10.4	11	12.3	11.2	12	12.8	12.8	12.5
11:52:00 PM	10.3	10.9	12.2	11.1	12	12.9	12.8	12.6
11:53:00 PM	10.4	11	12.3	11.2	12	13	12.9	12.6
11:54:00 PM	10.3	10.9	12.1	11.1	12	12.9	12.8	12.6
11:55:00 PM	10.5	11.1	12.4	11.3	12	12.8	12.8	12.5
11:56:00 PM	10.3	11	12.3	11.2	12	12.8	12.8	12.5
11:57:00 PM	10	10.8	12.1	11	12	12.8	12.8	12.5
11:58:00 PM	10	10.6	12	10.9	12	12.8	12.7	12.5
11:59:00 PM	9.9	10.5	11.9	10.8	12	12.7	12.6	12.4
12:00:00 AM	9.8	10.5	11.8	10.7	12	12.6	12.5	12.4
12:01:00 AM	10.1	10.6	12	10.9	12	12.6	12.5	12.4
12:02:00 AM	10.1	10.6	12	10.9	12	12.6	12.5	12.4
12:03:00 AM	10	10.6	11.9	10.8	12	12.6	12.6	12.4
12:04:00 AM	10.3	10.9	12.2	11.1	12	12.7	12.5	12.4
12:05:00 AM	10.2	10.7	12.1	11	12	12.7	12.6	12.4
12:06:00 AM	10.4	10.9	12.4	11.2	12	12.7	12.6	12.4
12:07:00 AM	10.3	10.9	12.2	11.1	12	12.7	12.6	12.4
12:08:00 AM	10.3	10.9	12.2	11.1	12	12.8	12.6	12.5
12:09:00 AM	10.3	11	12.2	11.2	12	12.7	12.6	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:10:00 AM	10.4	11	12.4	11.3	12	12.7	12.6	12.4
12:11:00 AM	10.3	10.8	12.2	11.1	12	12.7	12.6	12.4
12:12:00 AM	10.3	10.8	12.3	11.1	12	12.7	12.6	12.4
12:13:00 AM	10.2	10.8	12.1	11	12	12.6	12.5	12.4
12:14:00 AM	10.1	10.7	12.1	11	12	12.6	12.6	12.4
12:15:00 AM	10.3	10.8	12.2	11.1	12	12.7	12.6	12.4
12:16:00 AM	10.1	10.7	12.1	11	12	12.7	12.6	12.4
12:17:00 AM	10.2	10.8	12.2	11.1	12	12.6	12.5	12.4
12:18:00 AM	10.3	10.8	12.2	11.1	12	12.8	12.7	12.5
12:19:00 AM	10.3	10.8	12.2	11.1	12	13	12.9	12.6
12:20:00 AM	10.3	10.8	12.2	11.1	12	13.2	13.1	12.8
12:21:00 AM	10.4	11	12.3	11.2	12	12.8	12.8	12.5
12:22:00 AM	10.7	11.4	12.7	11.6	12	12.8	12.7	12.5
12:23:00 AM	10.5	10.9	12.5	11.3	12	12.9	12.8	12.6
12:24:00 AM	10.3	10.9	12.3	11.2	12	12.9	12.8	12.6
12:25:00 AM	10.8	11.4	12.7	11.6	12	12.8	12.8	12.5
12:26:00 AM	10.3	10.8	12.2	11.1	12	12.8	12.8	12.5
12:27:00 AM	10.3	10.8	12.2	11.1	12	12.8	12.8	12.5
12:28:00 AM	10.2	10.7	12.1	11	12	12.7	12.7	12.5
12:29:00 AM	10.2	10.8	12.1	11	12	12.8	12.7	12.5
12:30:00 AM	10.3	10.9	12.2	11.1	12	12.7	12.6	12.4
12:31:00 AM	9.9	10.5	11.9	10.8	12	12.7	12.6	12.4
12:32:00 AM	10.2	10.8	12.1	11	12	12.6	12.6	12.4
12:33:00 AM	9.9	10.4	11.8	10.7	12	12.6	12.5	12.4
12:34:00 AM	10.2	10.8	12.2	11.1	12	12.6	12.5	12.4
12:35:00 AM	10	10.5	11.9	10.8	12	12.6	12.5	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:36:00 AM	10	10.6	12	10.9	12	12.4	12.4	12.3
12:37:00 AM	10	10.6	12	10.9	12	12.4	12.5	12.3
12:38:00 AM	10	10.5	11.9	10.8	12	12.3	12.4	12.2
12:39:00 AM	9.8	10.3	11.8	10.6	12	12.3	12.4	12.2
12:40:00 AM	10	10.6	11.9	10.8	12	12.3	12.4	12.2
12:41:00 AM	10	10.7	12	10.9	12	12.4	12.4	12.3
12:42:00 AM	10	10.6	11.9	10.8	12	12.4	12.5	12.3
12:43:00 AM	10.1	10.7	12	10.9	12	12.4	12.5	12.3
12:44:00 AM	10	10.7	12	10.9	12	12.4	12.5	12.3
12:45:00 AM	10.1	10.8	12.1	11	12	12.4	12.5	12.3
12:46:00 AM	10.1	10.7	12	10.9	12	12.4	12.5	12.3
12:47:00 AM	10.1	10.7	12	10.9	12	12.3	12.5	12.3
12:48:00 AM	9.9	10.6	11.9	10.8	12	12.4	12.5	12.3
12:49:00 AM	9.6	10.3	11.7	10.5	12	12.5	12.6	12.4
12:50:00 AM	9.5	10.2	11.5	10.4	12	12.3	12.4	12.2
12:51:00 AM	9.7	10.4	11.7	10.6	12	12.5	12.5	12.3
12:52:00 AM	9.8	10.5	11.9	10.7	12	12.6	12.6	12.4
12:53:00 AM	9.8	10.5	11.8	10.7	12	12.6	12.6	12.4
12:54:00 AM	9.5	10.2	11.6	10.4	12	12.7	12.7	12.5
12:55:00 AM	9.6	10.3	11.6	10.5	12	12.8	12.9	12.6
12:56:00 AM	9.7	10.4	11.6	10.6	13	13	13	13
12:57:00 AM	9.6	10.6	11.6	10.6	12	13	13.1	12.7
12:58:00 AM	9.7	10.6	11.6	10.6	12	12.6	12.6	12.4
12:59:00 AM	9.5	10.4	11.5	10.5	12	12.4	12.5	12.3
1:00:00 AM	9.3	10.1	11.3	10.2	12	12.3	12.4	12.2
1:01:00 AM	9.1	9.9	11.1	10	12	12.2	12.2	12.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:02:00 AM	8.8	9.5	10.9	9.7	12	12	12.1	12
1:03:00 AM	8.7	9.4	10.8	9.6	12	11.8	11.9	11.9
1:04:00 AM	8.8	9.6	10.9	9.8	12	11.8	11.8	11.9
1:05:00 AM	9	9.8	11	9.9	11	11.8	11.7	11.5
1:06:00 AM	9.2	9.9	11.3	10.1	11	11.7	11.7	11.5
1:07:00 AM	9.3	10.1	11.4	10.3	11	11.7	11.8	11.5
1:08:00 AM	9.5	10.1	11.5	10.4	12	11.8	11.8	11.9
1:09:00 AM	9.3	10	11.4	10.2	11	11.8	11.8	11.5
1:10:00 AM	8.5	9.2	10.7	9.5	11	11.8	11.8	11.5
1:11:00 AM	8.5	9.1	10.5	9.4	12	11.9	11.9	11.9
1:12:00 AM	8.8	9.5	10.8	9.7	12	11.8	11.8	11.9
1:13:00 AM	9	9.6	11.1	9.9	11	11.6	11.5	11.4
1:14:00 AM	9.6	10.2	11.6	10.5	11	11.6	11.6	11.4
1:15:00 AM	9.6	10.3	11.7	10.5	11	11.6	11.7	11.4
1:16:00 AM	9.3	10	11.4	10.2	11	11.8	11.8	11.5
1:17:00 AM	9	9.7	11.1	9.9	11	11.8	11.8	11.5
1:18:00 AM	8.9	9.6	11	9.8	11	11.8	11.8	11.5
1:19:00 AM	9	9.7	11.2	10	11	11.7	11.7	11.5
1:20:00 AM	8.9	9.5	10.9	9.8	11	11.7	11.8	11.5
1:21:00 AM	9	9.6	11	9.9	12	11.8	11.9	11.9
1:22:00 AM	9.1	9.6	11	9.9	11	11.9	11.9	11.6
1:23:00 AM	8.9	9.6	10.9	9.8	12	11.9	11.9	11.9
1:24:00 AM	8.9	9.6	10.9	9.8	12	11.8	11.8	11.9
1:25:00 AM	8.9	9.7	10.9	9.8	11	11.7	11.7	11.5
1:26:00 AM	9.2	10	11.1	10.1	11	11.6	11.6	11.4
1:27:00 AM	9.3	10	11.3	10.2	11	11.7	11.8	11.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:28:00 AM	9.2	10	11.3	10.2	11	11.8	11.8	11.5
1:29:00 AM	9.5	10.2	11.6	10.4	12	11.8	11.8	11.9
1:30:00 AM	9.5	10.1	11.6	10.4	11	11.7	11.8	11.5
1:31:00 AM	9	9.5	11.1	9.9	11	11.8	11.9	11.6
1:32:00 AM	8.8	9.4	10.9	9.7	12	11.8	11.9	11.9
1:33:00 AM	8.8	9.4	10.9	9.7	12	11.8	11.8	11.9
1:34:00 AM	8.9	9.8	11	9.9	11	11.7	11.6	11.4
1:35:00 AM	9.2	10	11.2	10.1	11	11.6	11.6	11.4
1:36:00 AM	9.4	10	11.3	10.2	12	11.6	11.7	11.8
1:37:00 AM	9.4	10.1	11.4	10.3	11	11.6	11.7	11.4
1:38:00 AM	9.4	10.1	11.4	10.3	11	11.7	11.7	11.5
1:39:00 AM	8.9	9.6	11	9.8	11	11.6	11.7	11.4
1:40:00 AM	8.8	9.5	10.9	9.7	11	11.6	11.3	11.3
1:41:00 AM	9	9.5	11	9.8	11	11.5	11.5	11.3
1:42:00 AM	8.8	9.6	10.9	9.8	11	11.6	11.7	11.4
1:43:00 AM	8.8	9.7	10.9	9.8	11	11.8	11.9	11.6
1:44:00 AM	9	9.9	11	10	11	11.7	11.7	11.5
1:45:00 AM	9.2	9.9	11.2	10.1	11	11.6	11.7	11.4
1:46:00 AM	9.3	10	11.2	10.2	11	11.6	11.7	11.4
1:47:00 AM	9.5	10.1	11.4	10.3	11	11.7	11.8	11.5
1:48:00 AM	9.2	9.8	11.2	10.1	11	11.6	11.7	11.4
1:49:00 AM	9.3	10	11.3	10.2	11	11.6	11.7	11.4
1:50:00 AM	9.2	9.8	11.2	10.1	11	11.5	11.6	11.4
1:51:00 AM	9.3	10	11.3	10.2	11	11.4	11.4	11.3
1:52:00 AM	9.4	10.2	11.5	10.4	11	11.5	11.5	11.3
1:53:00 AM	9.4	10.1	11.4	10.3	11	11.6	11.6	11.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:54:00 AM	9.3	10	11.4	10.2	11	11.6	11.5	11.4
1:55:00 AM	9.3	9.8	11.3	10.1	11	11.1	11.3	11.1
1:56:00 AM	9.6	10.1	11.5	10.4	11	11.1	11.3	11.1
1:57:00 AM	9.6	10.2	11.6	10.5	11	11.4	11.4	11.3
1:58:00 AM	9.6	10.2	11.6	10.5	11	11.3	11.4	11.2
1:59:00 AM	9.6	10.3	11.6	10.5	11	11.4	11.4	11.3
2:00:00 AM	9.6	10.3	11.6	10.5	11	11.4	11.5	11.3
2:01:00 AM	9.7	10.3	11.6	10.5	11	11.6	11.6	11.4
2:02:00 AM	9.5	10	11.5	10.3	11	11.5	11.6	11.4
2:03:00 AM	9.4	10.1	11.4	10.3	11	11.5	11.6	11.4
2:04:00 AM	9.5	10.2	11.5	10.4	11	11.5	11.5	11.3
2:05:00 AM	9.6	10.1	11.6	10.4	11	11.5	11.5	11.3
2:06:00 AM	9.3	10	11.4	10.2	11	11.4	11.5	11.3
2:07:00 AM	9.4	10	11.4	10.3	11	11.4	11.4	11.3
2:08:00 AM	9.2	9.9	11.3	10.1	11	11.5	11.5	11.3
2:09:00 AM	9.6	10.2	11.6	10.5	11	11.5	11.6	11.4
2:10:00 AM	9.6	10.2	11.6	10.5	11	11.6	11.6	11.4
2:11:00 AM	9.6	10.2	11.6	10.5	11	11.6	11.7	11.4
2:12:00 AM	9.4	10.1	11.4	10.3	11	11.7	11.8	11.5
2:13:00 AM	9.4	10.1	11.4	10.3	11	11.6	11.7	11.4
2:14:00 AM	9.4	10	11.5	10.3	11	11.7	11.8	11.5
2:15:00 AM	9.5	10.2	11.5	10.4	12	11.9	12	12
2:16:00 AM	9.6	10.2	11.6	10.5	12	12.1	12.2	12.1
2:17:00 AM	9.5	10.1	11.6	10.4	12	12	12	12
2:18:00 AM	9.5	10.1	11.5	10.4	12	12.1	12	12
2:19:00 AM	9.8	10.3	11.7	10.6	12	12.2	12.2	12.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:20:00 AM	9.6	10.3	11.6	10.5	12	12.2	12.3	12.2
2:21:00 AM	10.1	10.5	12	10.9	12	11.7	11.8	11.8
2:22:00 AM	10	10.5	12	10.8	11	11.7	11.8	11.5
2:23:00 AM	9.9	10.5	11.9	10.8	11	11.6	11.8	11.5
2:24:00 AM	9.8	10.5	11.8	10.7	12	11.8	12	11.9
2:25:00 AM	9.9	10.5	11.9	10.8	12	12.1	12.2	12.1
2:26:00 AM	9.9	10.5	11.8	10.7	12	12.3	12.4	12.2
2:27:00 AM	9.7	10.5	11.8	10.7	12	12	12.1	12
2:28:00 AM	9.8	10.5	11.8	10.7	12	11.9	12	12
2:29:00 AM	9.6	10.2	11.6	10.5	12	11.8	11.9	11.9
2:30:00 AM	9.6	10.2	11.6	10.5	12	11.8	11.8	11.9
2:31:00 AM	9.5	10.1	11.6	10.4	11	11.4	11.6	11.3
2:32:00 AM	9.7	10.3	11.6	10.5	11	11.5	11.6	11.4
2:33:00 AM	9.6	10.3	11.6	10.5	11	11.5	11.6	11.4
2:34:00 AM	9.7	10.3	11.7	10.6	11	11.5	11.7	11.4
2:35:00 AM	9.6	10.2	11.6	10.5	11	11.8	11.9	11.6
2:36:00 AM	9.4	10	11.4	10.3	12	11.6	11.8	11.8
2:37:00 AM	9.3	10.1	11.3	10.2	11	11.6	11.7	11.4
2:38:00 AM	9.3	10	11.3	10.2	11	11.7	11.7	11.5
2:39:00 AM	9.3	10	11.3	10.2	11	11.7	11.7	11.5
2:40:00 AM	9.4	10.1	11.4	10.3	11	11.6	11.7	11.4
2:41:00 AM	9.4	10	11.4	10.3	11	11.6	11.7	11.4
2:42:00 AM	9.5	10.2	11.5	10.4	11	11.6	11.7	11.4
2:43:00 AM	9.8	10.5	11.8	10.7	11	11.7	11.7	11.5
2:44:00 AM	9.8	10.5	11.8	10.7	11	11.6	11.7	11.4
2:45:00 AM	9.1	9.6	11.2	10	11	11.4	11.6	11.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:46:00 AM	9.1	9.7	11.2	10	11	11.4	11.4	11.3
2:47:00 AM	9.2	9.8	11.3	10.1	11	11.3	11.4	11.2
2:48:00 AM	9.2	9.9	11.2	10.1	11	11.4	11.4	11.3
2:49:00 AM	9.1	9.6	11.2	10	11	11.2	11.2	11.1
2:50:00 AM	9.1	9.6	11.2	10	11	11.3	11.2	11.2
2:51:00 AM	9.3	10	11.3	10.2	11	11.2	11.2	11.1
2:52:00 AM	9.3	10	11.3	10.2	11	11.3	11.3	11.2
2:53:00 AM	9.3	9.8	11.4	10.2	11	11.3	11.3	11.2
2:54:00 AM	9.5	10.2	11.5	10.4	11	11.4	11.3	11.2
2:55:00 AM	9.5	10.2	11.6	10.4	11	11.3	11.4	11.2
2:56:00 AM	9.4	10.1	11.4	10.3	11	11.2	11.2	11.1
2:57:00 AM	9.5	10	11.5	10.3	11	11.5	11.4	11.3
2:58:00 AM	9.5	10.2	11.5	10.4	11	11.6	11.6	11.4
2:59:00 AM	9.8	10.5	11.8	10.7	11	11.6	11.6	11.4
3:00:00 AM	9.7	10.4	11.8	10.6	11	11.7	11.7	11.5
3:01:00 AM	9.4	10	11.4	10.3	11	11.4	11.4	11.3
3:02:00 AM	9.6	10.1	11.5	10.4	11	11.6	11.6	11.4
3:03:00 AM	9.8	10.3	11.7	10.6	11	11.7	11.6	11.4
3:04:00 AM	9.9	10.4	11.9	10.7	11	11.5	11.6	11.4
3:05:00 AM	9.6	10.1	11.6	10.4	11	11.4	11.5	11.3
3:06:00 AM	9.5	10.1	11.5	10.4	11	11.4	11.4	11.3
3:07:00 AM	9.4	9.9	11.3	10.2	11	11.4	11.5	11.3
3:08:00 AM	9.2	9.7	11.2	10	11	11.4	11.4	11.3
3:09:00 AM	9.3	9.9	11.3	10.2	11	11.3	11.3	11.2
3:10:00 AM	9.2	10	11.3	10.2	11	11.3	11.4	11.2
3:11:00 AM	9.3	10.1	11.3	10.2	11	11.4	11.3	11.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:12:00 AM	9.2	9.8	11.2	10.1	11	11.4	11.5	11.3
3:13:00 AM	9.2	9.9	11.3	10.1	11	11.5	11.6	11.4
3:14:00 AM	9.2	9.9	11.3	10.1	11	11.5	11.5	11.3
3:15:00 AM	9.3	9.9	11.3	10.2	11	11.3	11.3	11.2
3:16:00 AM	9.3	9.9	11.4	10.2	11	11.5	11.4	11.3
3:17:00 AM	9.3	10	11.4	10.2	11	11.3	11.5	11.3
3:18:00 AM	9	9.7	11.1	9.9	11	11.6	11.6	11.4
3:19:00 AM	9.1	9.8	11.2	10	11	11.7	11.7	11.5
3:20:00 AM	9.1	9.8	11.2	10	11	11.7	11.6	11.4
3:21:00 AM	9.1	9.8	11.1	10	11	11.3	11.3	11.2
3:22:00 AM	9.2	9.8	11.3	10.1	11	11.4	11.3	11.2
3:23:00 AM	9.3	10	11.3	10.2	11	11.4	11.4	11.3
3:24:00 AM	9.3	9.9	11.4	10.2	11	11.3	11.4	11.2
3:25:00 AM	9.4	10.1	11.4	10.3	11	11.3	11.3	11.2
3:26:00 AM	9.4	9.9	11.4	10.2	11	11.2	11.3	11.2
3:27:00 AM	9.4	10.1	11.4	10.3	11	11.3	11.2	11.2
3:28:00 AM	9.3	10	11.3	10.2	10	11.2	11.2	10.8
3:29:00 AM	9.3	9.9	11.4	10.2	11	11.2	11.2	11.1
3:30:00 AM	9.3	9.9	11.4	10.2	11	11.3	11.3	11.2
3:31:00 AM	9.4	10	11.4	10.3	11	11.4	11.5	11.3
3:32:00 AM	9.4	10.1	11.4	10.3	11	11.5	11.5	11.3
3:33:00 AM	9.4	9.9	11.4	10.2	11	11.4	11.5	11.3
3:34:00 AM	9.4	10	11.4	10.3	11	11.4	11.5	11.3
3:35:00 AM	9.5	10.1	11.5	10.4	11	11.6	11.6	11.4
3:36:00 AM	9.6	10.1	11.6	10.4	11	11.4	11.4	11.3
3:37:00 AM	9.7	10.3	11.6	10.5	11	11.3	11.4	11.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:38:00 AM	9.6	10.3	11.6	10.5	11	11.5	11.4	11.3
3:39:00 AM	9.5	10.1	11.6	10.4	11	11.5	11.4	11.3
3:40:00 AM	9.4	10.1	11.4	10.3	11	11.2	11.3	11.2
3:41:00 AM	9.4	10	11.4	10.3	11	11.3	11.2	11.2
3:42:00 AM	9.2	9.8	11.3	10.1	11	11.4	11.3	11.2
3:43:00 AM	9.2	9.8	11.3	10.1	11	11.2	11.3	11.2
3:44:00 AM	9.2	9.8	11.3	10.1	11	11.4	11.3	11.2
3:45:00 AM	9.1	9.9	11.2	10.1	11	11.3	11.4	11.2
3:46:00 AM	9.1	9.7	11.2	10	11	11.5	11.5	11.3
3:47:00 AM	9.1	9.8	11.2	10	11	11.3	11.3	11.2
3:48:00 AM	9.2	9.8	11.2	10.1	11	11.4	11.3	11.2
3:49:00 AM	9.1	9.7	11.1	10	11	11.3	11.4	11.2
3:50:00 AM	9.2	9.9	11.2	10.1	11	11.4	11.3	11.2
3:51:00 AM	9.1	9.6	11.1	9.9	11	11.1	11.3	11.1
3:52:00 AM	9.4	10	11.4	10.3	11	11.2	11.2	11.1
3:53:00 AM	9.3	9.9	11.3	10.2	11	11.2	11.2	11.1
3:54:00 AM	9.4	10	11.4	10.3	11	11.2	11.3	11.2
3:55:00 AM	9.4	10	11.4	10.3	11	11.2	11.4	11.2
3:56:00 AM	9.4	10.1	11.4	10.3	11	11.2	11.3	11.2
3:57:00 AM	9.4	10.1	11.4	10.3	11	11.5	11.4	11.3
3:58:00 AM	9.4	10	11.4	10.3	11	11.5	11.4	11.3
3:59:00 AM	9.2	9.9	11.3	10.1	11	11.4	11.4	11.3
4:00:00 AM	9.1	9.7	11.2	10	11	11.1	11.1	11.1
4:01:00 AM	9.2	9.8	11.2	10.1	11	11.3	11.2	11.2
4:02:00 AM	9.3	10	11.3	10.2	11	11.4	11.3	11.2
4:03:00 AM	9.5	10.1	11.5	10.4	11	11.2	11.2	11.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:04:00 AM	9.4	10	11.4	10.3	11	11.2	11.2	11.1
4:05:00 AM	9.4	10.1	11.5	10.3	11	11.1	11.2	11.1
4:06:00 AM	9.4	10	11.4	10.3	11	11.2	11.3	11.2
4:07:00 AM	9.2	9.8	11.3	10.1	11	11.2	11.2	11.1
4:08:00 AM	9.1	9.8	11.2	10	10	11.2	11.1	10.8
4:09:00 AM	9.2	9.8	11.2	10.1	11	11.2	11.1	11.1
4:10:00 AM	9.3	9.9	11.3	10.2	11	11.2	11.2	11.1
4:11:00 AM	9.2	9.9	11.2	10.1	11	11.1	11.2	11.1
4:12:00 AM	9.4	9.9	11.3	10.2	11	11.1	11.2	11.1
4:13:00 AM	9.3	9.8	11.4	10.2	11	11.1	11.2	11.1
4:14:00 AM	9.2	9.9	11.2	10.1	10	11.2	11.3	10.8
4:15:00 AM	9.2	9.8	11.2	10.1	11	11.3	11.2	11.2
4:16:00 AM	9	9.6	11.1	9.9	10	11.1	11.2	10.8
4:17:00 AM	9.1	9.8	11.2	10	10	11	11.1	10.7
4:18:00 AM	9	9.7	11.1	9.9	11	10.9	11	11
4:19:00 AM	8.9	9.6	11	9.8	10	11.1	11.1	10.7
4:20:00 AM	8.9	9.6	11	9.8	11	11.2	11.2	11.1
4:21:00 AM	9	9.7	11.1	9.9	10	11.2	11.2	10.8
4:22:00 AM	9.1	9.8	11.2	10	11	11.2	11.3	11.2
4:23:00 AM	9	9.7	11.1	9.9	11	11.4	11.3	11.2
4:24:00 AM	8.9	9.6	10.9	9.8	11	11.2	11.2	11.1
4:25:00 AM	8.8	9.5	10.9	9.7	11	11	11.1	11
4:26:00 AM	8.6	9.4	10.8	9.6	10	11.1	11.1	10.7
4:27:00 AM	8.7	9.2	10.7	9.5	11	11.2	11.1	11.1
4:28:00 AM	8.6	9.1	10.6	9.4	10	10.9	11	10.6
4:29:00 AM	8.7	9.3	10.7	9.6	10	10.9	11	10.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:30:00 AM	8.8	9.4	10.8	9.7	10	11	10.9	10.6
4:31:00 AM	8.7	9.3	10.7	9.6	10	10.9	10.9	10.6
4:32:00 AM	8.8	9.4	10.8	9.7	11	11.2	11	11.1
4:33:00 AM	8.6	9.3	10.7	9.5	11	10.9	11	11
4:34:00 AM	8.6	9.3	10.7	9.5	11	11	11.1	11
4:35:00 AM	8.7	9.4	10.7	9.6	10	11	11	10.7
4:36:00 AM	8.8	9.4	10.8	9.7	11	10.9	11	11
4:37:00 AM	8.7	9.4	10.7	9.6	10	10.8	10.8	10.5
4:38:00 AM	8.7	9.4	10.7	9.6	10	10.9	10.8	10.6
4:39:00 AM	8.4	9	10.5	9.3	10	10.9	10.9	10.6
4:40:00 AM	8.5	9.2	10.6	9.4	10	10.7	10.7	10.5
4:41:00 AM	8.4	9	10.4	9.3	10	10.7	10.7	10.5
4:42:00 AM	8.3	9	10.4	9.2	10	10.9	10.8	10.6
4:43:00 AM	8.4	9	10.5	9.3	10	10.9	10.8	10.6
4:44:00 AM	8.4	9.1	10.5	9.3	10	10.9	10.9	10.6
4:45:00 AM	8.4	9.1	10.5	9.3	10	10.8	10.7	10.5
4:46:00 AM	8.4	9.1	10.5	9.3	10	10.7	10.7	10.5
4:47:00 AM	8	8.7	10.2	9	10	10.6	10.5	10.4
4:48:00 AM	8	8.8	10.1	9	10	10.5	10.6	10.4
4:49:00 AM	8	8.8	10.1	9	10	10.6	10.6	10.4
4:50:00 AM	8.2	8.8	10.3	9.1	10	10.6	10.6	10.4
4:51:00 AM	8.1	8.8	10.3	9.1	10	10.7	10.6	10.4
4:52:00 AM	8	8.7	10.2	9	10	10.6	10.6	10.4
4:53:00 AM	8.1	8.7	10.1	9	10	10.5	10.6	10.4
4:54:00 AM	7.9	8.4	9.9	8.7	10	10.4	10.5	10.3
4:55:00 AM	8	8.6	10.1	8.9	10	10.8	10.7	10.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:56:00 AM	8.2	8.8	10.2	9.1	10	10.5	10.6	10.4
4:57:00 AM	8.3	9	10.4	9.2	10	10.5	10.5	10.3
4:58:00 AM	8.4	8.9	10.4	9.2	10	10.5	10.5	10.3
4:59:00 AM	8.5	9.1	10.6	9.4	10	10.4	10.5	10.3
5:00:00 AM	8.5	9.1	10.6	9.4	10	10.6	10.5	10.4
5:01:00 AM	8.5	9.1	10.5	9.4	10	10.6	10.7	10.4
5:02:00 AM	8.5	9.1	10.5	9.4	10	10.5	10.6	10.4
5:03:00 AM	8.4	9	10.5	9.3	10	10.6	10.6	10.4
5:04:00 AM	8.2	8.8	10.3	9.1	10	10.7	10.7	10.5
5:05:00 AM	8.8	9.4	10.7	9.6	10	10.5	10.6	10.4
5:06:00 AM	8.6	9.1	10.7	9.5	10	10.5	10.5	10.3
5:07:00 AM	8.5	9.1	10.6	9.4	10	10.4	10.4	10.3
5:08:00 AM	8.5	9.1	10.5	9.4	10	10.4	10.5	10.3
5:09:00 AM	8.2	8.7	10.2	9	10	10.4	10.6	10.3
5:10:00 AM	8.2	8.9	10.2	9.1	10	10.4	10.5	10.3
5:11:00 AM	8.4	9.1	10.4	9.3	10	10.5	10.5	10.3
5:12:00 AM	8.2	8.8	10.3	9.1	10	10.6	10.5	10.4
5:13:00 AM	8	8.7	10.1	8.9	10	10.5	10.4	10.3
5:14:00 AM	8	8.6	10.1	8.9	10	10.5	10.4	10.3
5:15:00 AM	8	8.5	10.1	8.9	10	10.5	10.4	10.3
5:16:00 AM	8	8.6	10.1	8.9	10	10.4	10.3	10.2
5:17:00 AM	7.9	8.4	9.9	8.7	10	10.2	10.1	10.1
5:18:00 AM	7.8	8.5	9.9	8.7	10	10.2	10.1	10.1
5:19:00 AM	7.8	8.5	10	8.8	10	10.2	10.3	10.2
5:20:00 AM	7.8	8.4	10	8.7	10	10.2	10.2	10.1
5:21:00 AM	7.8	8.4	10	8.7	10	10.1	10.2	10.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:22:00 AM	7.9	8.5	9.9	8.8	10	10.1	10.1	10.1
5:23:00 AM	7.9	8.5	9.9	8.8	10	10.1	10.1	10.1
5:24:00 AM	7.9	8.5	10	8.8	10	10.2	10.2	10.1
5:25:00 AM	7.9	8.4	9.9	8.7	10	9.9	10.1	10
5:26:00 AM	7.9	8.5	10.1	8.8	10	9.8	9.9	9.9
5:27:00 AM	8	8.6	10.2	8.9	10	9.9	10	10
5:28:00 AM	8.1	8.7	10.2	9	10	10	10	10
5:29:00 AM	7.8	8.4	10	8.7	9	9.9	9.9	9.6
5:30:00 AM	7.9	8.5	10	8.8	9	9.9	10	9.6
5:31:00 AM	7.9	8.5	10.1	8.8	9	9.9	10	9.6
5:32:00 AM	8	8.5	10	8.8	10	10	10.1	10
5:33:00 AM	7.7	8.3	9.8	8.6	10	9.8	10	9.9
5:34:00 AM	7.9	8.5	10	8.8	10	9.8	10	9.9
5:35:00 AM	8	8.6	10.1	8.9	10	9.9	10.1	10
5:36:00 AM	7.7	8.3	9.7	8.6	9	9.8	9.9	9.6
5:37:00 AM	7.7	8.3	9.8	8.6	9	9.9	10	9.6
5:38:00 AM	7.7	8.3	9.8	8.6	9	9.8	9.9	9.6
5:39:00 AM	7.8	8.3	9.9	8.7	10	9.9	10	10
5:40:00 AM	7.8	8.3	9.8	8.6	10	9.8	9.9	9.9
5:41:00 AM	7.8	8.4	10	8.7	9	9.8	9.8	9.5
5:42:00 AM	8	8.5	10	8.8	10	9.8	9.9	9.9
5:43:00 AM	7.9	8.4	10	8.8	10	10	10.1	10
5:44:00 AM	7.5	8	9.6	8.4	10	9.9	9.9	9.9
5:45:00 AM	7.6	8.2	9.7	8.5	9	9.8	9.9	9.6
5:46:00 AM	7.7	8.3	9.8	8.6	10	9.8	9.9	9.9
5:47:00 AM	7.7	8.3	9.8	8.6	10	9.9	10	10

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:48:00 AM	7.7	8.4	9.8	8.6	10	10	10.1	10
5:49:00 AM	7.7	8.4	9.8	8.6	10	10.1	10.2	10.1
5:50:00 AM	7.6	8.2	9.7	8.5	10	10.1	10.1	10.1
5:51:00 AM	7.8	8.4	9.9	8.7	10	10.1	10.1	10.1
5:52:00 AM	7.6	8.1	9.7	8.5	10	10.1	10.1	10.1
5:53:00 AM	7.7	8.4	9.8	8.6	10	10	10.1	10
5:54:00 AM	7.5	8	9.6	8.4	10	10.1	10.1	10.1
5:55:00 AM	7.7	8.2	9.8	8.6	10	10	10	10
5:56:00 AM	7.8	8.4	9.9	8.7	10	10	10	10
5:57:00 AM	7.6	8.2	9.7	8.5	10	9.9	10	10
5:58:00 AM	7.8	8.3	9.9	8.7	10	9.8	9.9	9.9
5:59:00 AM	7.8	8.4	9.9	8.7	9	9.8	9.9	9.6

Appendix 3: Indoor and Outdoor temperatures of July 5th 2018 (T_{expVal} in °C)

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:00:00 AM	11.8	13.4	11.4	12.2	12.0	12.3	12.4	12.2
6:01:00 AM	11.9	13.5	11.4	12.3	12.0	12.4	12.5	12.3
6:02:00 AM	11.9	13.5	11.4	12.3	12.0	12.4	12.5	12.3
6:03:00 AM	11.8	13.4	11.4	12.2	12.0	12.4	12.5	12.3
6:04:00 AM	11.9	13.5	11.4	12.3	12.0	12.4	12.5	12.3
6:05:00 AM	11.9	13.4	11.4	12.2	12.0	12.4	12.6	12.3
6:06:00 AM	11.8	13.4	11.4	12.2	12.0	12.4	12.6	12.3
6:07:00 AM	11.8	13.4	11.4	12.2	12.0	12.4	12.6	12.3
6:08:00 AM	11.9	13.5	11.5	12.3	12.0	12.4	12.5	12.3
6:09:00 AM	12.0	13.6	11.6	12.4	12.0	12.4	12.6	12.3
6:10:00 AM	11.9	13.5	11.5	12.3	12.0	12.5	12.6	12.4
6:11:00 AM	11.9	13.5	11.5	12.3	12.0	12.5	12.6	12.4
6:12:00 AM	12.0	13.6	11.6	12.4	12.0	12.5	12.6	12.4
6:13:00 AM	12.0	13.5	11.5	12.3	12.0	12.5	12.6	12.4
6:14:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:15:00 AM	12.1	13.6	11.6	12.4	12.0	12.5	12.6	12.4
6:16:00 AM	12.1	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:17:00 AM	11.9	13.5	11.5	12.3	12.0	12.5	12.6	12.4
6:18:00 AM	12.0	13.6	11.6	12.4	12.0	12.5	12.6	12.4
6:19:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:20:00 AM	12.1	13.6	11.6	12.4	12.0	12.5	12.6	12.4
6:21:00 AM	12.1	13.6	11.7	12.5	12.0	12.6	12.6	12.4
6:22:00 AM	12.2	13.7	11.7	12.5	12.0	12.5	12.6	12.4
6:23:00 AM	12.1	13.7	11.6	12.5	12.0	12.6	12.7	12.4
6:24:00 AM	12.1	13.7	11.7	12.5	12.0	12.6	12.6	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:25:00 AM	12.1	13.5	11.6	12.4	12.0	12.6	12.7	12.4
6:26:00 AM	12.0	13.4	11.5	12.3	12.0	12.6	12.7	12.4
6:27:00 AM	12.0	13.5	11.5	12.3	12.0	12.6	12.6	12.4
6:28:00 AM	11.9	13.4	11.5	12.3	12.0	12.6	12.6	12.4
6:29:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:30:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:31:00 AM	12.0	13.6	11.6	12.4	12.0	12.6	12.7	12.4
6:32:00 AM	12.0	13.5	11.6	12.4	12.0	12.6	12.7	12.4
6:33:00 AM	12.0	13.4	11.5	12.3	12.0	12.5	12.6	12.4
6:34:00 AM	12.0	13.5	11.5	12.3	12.0	12.6	12.6	12.4
6:35:00 AM	12.0	13.5	11.6	12.4	12.0	12.6	12.6	12.4
6:36:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:37:00 AM	11.9	13.4	11.5	12.3	12.0	12.5	12.6	12.4
6:38:00 AM	12.1	13.4	11.5	12.3	12.0	12.6	12.6	12.4
6:39:00 AM	12.1	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:40:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:41:00 AM	12.0	13.5	11.5	12.3	12.0	12.5	12.6	12.4
6:42:00 AM	12.0	13.4	11.5	12.3	12.0	12.5	12.6	12.4
6:43:00 AM	12.0	13.5	11.6	12.4	12.0	12.6	12.6	12.4
6:44:00 AM	12.0	13.4	11.6	12.3	12.0	12.6	12.6	12.4
6:45:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:46:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:47:00 AM	12.1	13.5	11.5	12.4	12.0	12.5	12.6	12.4
6:48:00 AM	12.0	13.4	11.5	12.3	12.0	12.6	12.6	12.4
6:49:00 AM	12.1	13.5	11.5	12.4	12.0	12.6	12.6	12.4
6:50:00 AM	12.0	13.5	11.5	12.3	12.0	12.6	12.6	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:51:00 AM	12.0	13.4	11.5	12.3	12.0	12.5	12.6	12.4
6:52:00 AM	12.0	13.4	11.5	12.3	12.0	12.5	12.6	12.4
6:53:00 AM	12.1	13.5	11.5	12.4	12.0	12.5	12.6	12.4
6:54:00 AM	12.1	13.5	11.5	12.4	12.0	12.5	12.6	12.4
6:55:00 AM	12.0	13.5	11.6	12.4	12.0	12.5	12.6	12.4
6:56:00 AM	12.1	13.5	11.6	12.4	12.0	12.5	12.7	12.4
6:57:00 AM	12.2	13.5	11.6	12.4	12.0	12.6	12.6	12.4
6:58:00 AM	12.0	13.5	11.7	12.4	12.0	12.5	12.6	12.4
6:59:00 AM	12.1	13.5	11.6	12.4	12.0	12.6	12.7	12.4
7:00:00 AM	12.0	13.5	11.7	12.4	12.0	12.6	12.7	12.4
7:01:00 AM	12.0	13.6	11.6	12.4	12.0	12.6	12.7	12.4
7:02:00 AM	12.0	13.6	11.7	12.4	12.0	12.6	12.7	12.4
7:03:00 AM	12.1	13.6	11.8	12.5	12.0	12.6	12.7	12.4
7:04:00 AM	12.1	13.6	11.7	12.5	12.0	12.6	12.7	12.4
7:05:00 AM	12.2	13.6	11.7	12.5	12.0	12.6	12.7	12.4
7:06:00 AM	12.1	13.6	11.8	12.5	12.0	12.6	12.7	12.4
7:07:00 AM	12.2	13.6	11.7	12.5	12.0	12.6	12.6	12.4
7:08:00 AM	12.2	13.6	11.7	12.5	12.0	12.6	12.7	12.4
7:09:00 AM	12.2	13.7	11.8	12.6	12.0	12.6	12.7	12.4
7:10:00 AM	12.3	13.7	11.8	12.6	12.0	12.6	12.7	12.4
7:11:00 AM	12.2	13.8	11.9	12.6	12.0	12.6	12.7	12.4
7:12:00 AM	12.3	13.7	11.8	12.6	12.0	12.6	12.8	12.5
7:13:00 AM	12.3	13.9	11.8	12.7	12.0	12.6	12.8	12.5
7:14:00 AM	12.3	13.8	11.8	12.6	12.0	12.7	12.8	12.5
7:15:00 AM	12.3	13.8	11.9	12.7	12.0	12.7	12.8	12.5
7:16:00 AM	12.5	13.9	11.9	12.8	12.0	12.7	12.8	12.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:17:00 AM	12.4	13.9	12.0	12.8	12.0	12.7	12.8	12.5
7:18:00 AM	12.5	14.0	12.1	12.9	12.0	12.8	12.8	12.5
7:19:00 AM	12.6	14.0	12.0	12.9	12.0	12.7	12.8	12.5
7:20:00 AM	12.6	14.1	12.2	13.0	12.0	12.7	12.8	12.5
7:21:00 AM	12.5	14.0	12.0	12.8	12.0	12.8	12.8	12.5
7:22:00 AM	12.7	14.1	12.1	13.0	13.0	12.8	12.9	12.9
7:23:00 AM	12.6	14.1	12.1	12.9	12.0	12.8	12.9	12.6
7:24:00 AM	12.8	14.2	12.2	13.1	12.0	12.8	12.9	12.6
7:25:00 AM	12.7	14.2	12.2	13.0	12.0	12.8	12.9	12.6
7:26:00 AM	12.8	14.2	12.2	13.1	12.0	12.8	12.9	12.6
7:27:00 AM	12.8	14.3	12.3	13.1	12.0	12.8	13.0	12.6
7:28:00 AM	12.8	14.3	12.3	13.1	12.0	12.9	13.0	12.6
7:29:00 AM	12.9	14.3	12.4	13.2	12.0	12.9	13.0	12.6
7:30:00 AM	13.0	14.4	12.5	13.3	13.0	12.9	13.1	13.0
7:31:00 AM	13.1	14.6	12.6	13.4	12.0	12.9	13.1	12.7
7:32:00 AM	13.1	14.6	12.6	13.4	13.0	13.0	13.1	13.0
7:33:00 AM	13.2	14.7	12.7	13.5	13.0	13.0	13.2	13.1
7:34:00 AM	13.3	14.8	12.8	13.6	13.0	13.1	13.3	13.1
7:35:00 AM	13.3	14.8	12.8	13.6	13.0	13.1	13.3	13.1
7:36:00 AM	13.5	14.9	12.8	13.7	13.0	13.1	13.3	13.1
7:37:00 AM	13.4	14.8	12.8	13.7	13.0	13.2	13.3	13.2
7:38:00 AM	13.4	14.9	12.9	13.7	13.0	13.2	13.3	13.2
7:39:00 AM	13.7	15.1	13.1	14.0	13.0	13.2	13.4	13.2
7:40:00 AM	13.7	15.1	13.1	14.0	13.0	13.2	13.4	13.2
7:41:00 AM	13.9	15.3	13.4	14.2	13.0	13.3	13.4	13.2
7:42:00 AM	13.9	15.3	13.3	14.2	13.0	13.3	13.5	13.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:43:00 AM	14.1	15.4	13.4	14.3	13.0	13.3	13.5	13.3
7:44:00 AM	14.0	15.5	13.3	14.3	13.0	13.5	13.5	13.3
7:45:00 AM	14.0	15.5	13.4	14.3	13.0	13.5	13.5	13.3
7:46:00 AM	14.5	15.9	13.9	14.8	13.0	13.5	13.6	13.4
7:47:00 AM	14.3	15.8	13.8	14.6	13.0	13.5	13.7	13.4
7:48:00 AM	14.3	15.8	13.8	14.6	13.0	13.7	13.8	13.5
7:49:00 AM	14.6	16.1	14.2	15.0	13.0	13.8	13.9	13.6
7:50:00 AM	14.1	15.6	13.6	14.4	13.0	13.7	13.9	13.5
7:51:00 AM	14.2	15.7	13.9	14.6	13.0	13.9	13.9	13.6
7:52:00 AM	14.3	15.8	13.9	14.7	13.0	13.8	13.9	13.6
7:53:00 AM	14.3	15.8	13.9	14.7	13.0	13.7	13.9	13.5
7:54:00 AM	14.5	16.0	14.0	14.8	13.0	13.7	13.9	13.5
7:55:00 AM	14.5	16.0	14.1	14.9	13.0	13.8	14.0	13.6
7:56:00 AM	14.8	16.2	14.3	15.1	13.0	14.2	14.3	13.8
7:57:00 AM	14.7	16.1	14.2	15.0	14.0	14.1	14.3	14.1
7:58:00 AM	14.3	15.8	13.9	14.7	14.0	14.1	14.2	14.1
7:59:00 AM	14.5	16.0	13.9	14.8	13.0	14.0	14.1	13.7
8:00:00 AM	14.3	15.8	13.9	14.7	13.0	14.1	14.2	13.8
8:01:00 AM	14.9	16.2	14.3	15.1	13.0	14.2	14.2	13.8
8:02:00 AM	14.7	16.2	14.4	15.1	13.0	14.2	14.3	13.8
8:03:00 AM	14.7	16.3	14.5	15.2	13.0	14.1	14.2	13.8
8:04:00 AM	14.6	16.1	14.2	15.0	13.0	14.2	14.2	13.8
8:05:00 AM	14.7	16.1	14.2	15.0	13.0	14.0	14.2	13.7
8:06:00 AM	14.5	16.0	14.0	14.8	13.0	14.1	14.2	13.8
8:07:00 AM	14.5	16.0	14.1	14.9	13.0	14.1	14.2	13.8
8:08:00 AM	14.5	16.0	14.1	14.9	13.0	14.0	14.1	13.7

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:09:00 AM	14.7	16.3	14.5	15.2	13.0	13.9	14.1	13.7
8:10:00 AM	14.7	16.3	14.3	15.1	13.0	14.0	14.2	13.7
8:11:00 AM	14.4	15.9	14.0	14.8	13.0	14.1	14.2	13.8
8:12:00 AM	14.3	15.8	13.9	14.7	14.0	14.0	14.1	14.0
8:13:00 AM	14.2	15.7	13.7	14.5	13.0	14.0	14.2	13.7
8:14:00 AM	14.5	16.0	14.0	14.8	13.0	14.0	14.2	13.7
8:15:00 AM	14.3	15.8	13.9	14.7	13.0	13.9	14.1	13.7
8:16:00 AM	14.4	15.8	13.9	14.7	13.0	14.0	14.1	13.7
8:17:00 AM	14.3	15.8	13.9	14.7	13.0	14.0	14.1	13.7
8:18:00 AM	14.2	15.6	13.7	14.5	13.0	14.1	14.1	13.7
8:19:00 AM	14.3	15.7	13.8	14.6	13.0	13.9	14.0	13.6
8:20:00 AM	14.9	16.2	14.4	15.2	13.0	13.9	14.1	13.7
8:21:00 AM	14.7	16.4	14.5	15.2	13.0	14.2	14.1	13.8
8:22:00 AM	14.7	16.2	14.2	15.0	13.0	14.1	14.2	13.8
8:23:00 AM	14.8	16.3	14.3	15.1	13.0	14.1	14.3	13.8
8:24:00 AM	14.6	16.1	14.1	14.9	13.0	14.1	14.2	13.8
8:25:00 AM	14.7	16.2	14.3	15.1	13.0	14.2	14.2	13.8
8:26:00 AM	14.9	16.3	14.4	15.2	13.0	14.3	14.3	13.9
8:27:00 AM	14.5	16.0	14.1	14.9	13.0	14.3	14.3	13.9
8:28:00 AM	14.3	15.8	13.9	14.7	13.0	14.3	14.2	13.8
8:29:00 AM	14.3	15.8	13.8	14.6	13.0	14.0	14.2	13.7
8:30:00 AM	14.7	16.2	14.2	15.0	13.0	14.1	14.1	13.7
8:31:00 AM	14.4	15.9	14.0	14.8	13.0	14.0	14.2	13.7
8:32:00 AM	14.5	16.0	14.1	14.9	13.0	14.2	14.2	13.8
8:33:00 AM	14.5	16.0	14.1	14.9	13.0	14.2	14.2	13.8
8:34:00 AM	14.5	16.0	14.1	14.9	13.0	14.1	14.3	13.8

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:35:00 AM	14.8	16.3	14.3	15.1	13.0	14.2	14.3	13.8
8:36:00 AM	14.6	16.2	14.2	15.0	13.0	14.3	14.3	13.9
8:37:00 AM	14.7	16.2	14.2	15.0	13.0	14.3	14.3	13.9
8:38:00 AM	15.0	16.6	14.5	15.4	13.0	14.3	14.3	13.9
8:39:00 AM	14.8	16.3	14.4	15.2	14.0	14.2	14.4	14.2
8:40:00 AM	14.6	16.1	14.1	14.9	13.0	14.2	14.4	13.9
8:41:00 AM	14.8	16.3	14.3	15.1	14.0	14.2	14.4	14.2
8:42:00 AM	14.7	16.2	14.2	15.0	14.0	14.2	14.4	14.2
8:43:00 AM	14.5	16.1	14.1	14.9	13.0	14.2	14.3	13.8
8:44:00 AM	14.3	15.7	13.8	14.6	14.0	14.1	14.3	14.1
8:45:00 AM	14.3	15.8	13.8	14.6	13.0	14.2	14.3	13.8
8:46:00 AM	14.3	15.9	13.9	14.7	13.0	14.2	14.3	13.8
8:47:00 AM	14.4	15.9	13.9	14.7	13.0	14.4	14.4	13.9
8:48:00 AM	14.5	15.9	13.9	14.8	13.0	14.2	14.3	13.8
8:49:00 AM	14.3	15.8	13.9	14.7	13.0	14.3	14.3	13.9
8:50:00 AM	14.5	16.0	14.1	14.9	13.0	14.3	14.3	13.9
8:51:00 AM	14.5	16.0	14.1	14.9	14.0	14.3	14.4	14.2
8:52:00 AM	14.4	15.9	14.0	14.8	13.0	14.4	14.3	13.9
8:53:00 AM	14.3	15.8	13.9	14.7	14.0	14.2	14.3	14.2
8:54:00 AM	14.3	15.8	13.9	14.7	13.0	14.1	14.2	13.8
8:55:00 AM	14.3	15.8	13.9	14.7	13.0	14.3	14.2	13.8
8:56:00 AM	14.3	15.8	13.8	14.6	13.0	14.1	14.2	13.8
8:57:00 AM	14.3	15.7	13.8	14.6	13.0	14.1	14.2	13.8
8:58:00 AM	14.2	15.7	13.7	14.5	13.0	14.2	14.2	13.8
8:59:00 AM	14.3	15.8	13.9	14.7	13.0	14.2	14.2	13.8
9:00:00 AM	14.3	15.8	13.9	14.7	13.0	14.1	14.2	13.8

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:01:00 AM	14.4	15.8	14.0	14.7	13.0	14.1	14.3	13.8
9:02:00 AM	14.6	16.1	14.1	14.9	13.0	14.3	14.3	13.9
9:03:00 AM	14.7	16.2	14.2	15.0	14.0	14.3	14.3	14.2
9:04:00 AM	14.5	16.0	14.1	14.9	14.0	14.4	14.4	14.3
9:05:00 AM	14.5	16.1	14.1	14.9	13.0	14.3	14.3	13.9
9:06:00 AM	14.6	16.2	14.2	15.0	14.0	14.2	14.4	14.2
9:07:00 AM	14.5	16.0	14.1	14.9	14.0	14.4	14.4	14.3
9:08:00 AM	14.7	16.2	14.2	15.0	14.0	14.4	14.4	14.3
9:09:00 AM	14.6	16.1	14.1	14.9	14.0	14.4	14.4	14.3
9:10:00 AM	14.6	16.1	14.2	15.0	14.0	14.3	14.5	14.3
9:11:00 AM	14.5	16.0	14.0	14.8	14.0	14.4	14.5	14.3
9:12:00 AM	14.6	16.1	14.2	15.0	13.0	14.2	14.4	13.9
9:13:00 AM	14.8	16.3	14.3	15.1	14.0	14.3	14.5	14.3
9:14:00 AM	14.7	16.3	14.3	15.1	14.0	14.5	14.5	14.3
9:15:00 AM	14.5	16.0	14.1	14.9	14.0	14.4	14.5	14.3
9:16:00 AM	14.6	16.2	14.2	15.0	14.0	14.4	14.4	14.3
9:17:00 AM	14.5	16.0	14.0	14.8	13.0	14.4	14.4	13.9
9:18:00 AM	14.4	16.0	14.0	14.8	14.0	14.4	14.4	14.3
9:19:00 AM	14.5	16.0	14.1	14.9	14.0	14.4	14.4	14.3
9:20:00 AM	14.6	16.1	14.1	14.9	14.0	14.4	14.4	14.3
9:21:00 AM	14.6	16.1	14.1	14.9	14.0	14.4	14.4	14.3
9:22:00 AM	14.6	16.1	14.2	15.0	14.0	14.4	14.4	14.3
9:23:00 AM	14.4	15.9	14.0	14.8	14.0	14.5	14.5	14.3
9:24:00 AM	14.5	16.0	14.0	14.8	14.0	14.4	14.4	14.3
9:25:00 AM	14.3	15.8	13.9	14.7	14.0	14.2	14.4	14.2
9:26:00 AM	14.3	15.8	13.8	14.6	13.0	14.4	14.3	13.9

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:27:00 AM	14.2	15.7	13.8	14.6	13.0	14.2	14.3	13.8
9:28:00 AM	14.2	15.7	13.7	14.5	13.0	14.3	14.3	13.9
9:29:00 AM	14.2	15.7	13.8	14.6	14.0	14.3	14.3	14.2
9:30:00 AM	14.2	15.6	13.7	14.5	13.0	14.1	14.3	13.8
9:31:00 AM	14.4	15.8	13.8	14.7	13.0	14.3	14.3	13.9
9:32:00 AM	14.3	15.8	13.9	14.7	13.0	14.2	14.3	13.8
9:33:00 AM	14.2	15.6	13.7	14.5	13.0	14.3	14.3	13.9
9:34:00 AM	14.2	15.7	13.8	14.6	14.0	14.2	14.3	14.2
9:35:00 AM	14.2	15.7	13.8	14.6	13.0	14.2	14.3	13.8
9:36:00 AM	14.3	15.7	13.8	14.6	13.0	14.3	14.3	13.9
9:37:00 AM	14.3	15.6	13.7	14.5	13.0	14.3	14.3	13.9
9:38:00 AM	14.3	15.7	13.7	14.6	13.0	14.2	14.3	13.8
9:39:00 AM	14.3	15.7	13.8	14.6	13.0	14.1	14.3	13.8
9:40:00 AM	14.2	15.7	13.8	14.6	13.0	14.2	14.3	13.8
9:41:00 AM	14.3	15.8	13.9	14.7	13.0	14.3	14.3	13.9
9:42:00 AM	14.2	15.7	13.8	14.6	13.0	14.3	14.3	13.9
9:43:00 AM	14.5	15.8	14.0	14.8	14.0	14.2	14.3	14.2
9:44:00 AM	14.4	15.8	13.9	14.7	13.0	14.2	14.3	13.8
9:45:00 AM	14.3	15.7	13.8	14.6	13.0	14.2	14.3	13.8
9:46:00 AM	14.2	15.7	13.8	14.6	13.0	14.2	14.3	13.8
9:47:00 AM	14.3	15.6	13.8	14.6	13.0	14.1	14.3	13.8
9:48:00 AM	14.3	15.8	13.9	14.7	13.0	14.2	14.3	13.8
9:49:00 AM	14.4	15.9	14.0	14.8	13.0	14.2	14.4	13.9
9:50:00 AM	14.8	16.0	14.2	15.0	14.0	14.2	14.4	14.2
9:51:00 AM	14.7	16.1	14.2	15.0	14.0	14.3	14.4	14.2
9:52:00 AM	14.9	16.4	14.4	15.2	14.0	14.5	14.4	14.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:53:00 AM	14.5	16.1	14.1	14.9	14.0	14.5	14.5	14.3
9:54:00 AM	14.7	16.2	14.2	15.0	14.0	14.3	14.5	14.3
9:55:00 AM	14.7	16.2	14.2	15.0	13.0	14.3	14.5	13.9
9:56:00 AM	14.6	16.1	14.1	14.9	14.0	14.3	14.5	14.3
9:57:00 AM	14.7	16.2	14.2	15.0	14.0	14.4	14.5	14.3
9:58:00 AM	14.9	16.4	14.4	15.2	14.0	14.5	14.6	14.4
9:59:00 AM	14.9	16.4	14.4	15.2	14.0	14.6	14.6	14.4
10:00:00 AM	14.9	16.3	14.3	15.2	14.0	14.5	14.7	14.4
10:01:00 AM	15.0	16.5	14.5	15.3	14.0	14.6	14.7	14.4
10:02:00 AM	15.1	16.6	14.6	15.4	14.0	14.5	14.7	14.4
10:03:00 AM	15.1	16.6	14.6	15.4	14.0	14.6	14.7	14.4
10:04:00 AM	15.2	16.7	14.7	15.5	14.0	14.6	14.7	14.4
10:05:00 AM	15.2	16.7	14.7	15.5	14.0	14.6	14.7	14.4
10:06:00 AM	15.4	16.9	14.8	15.7	14.0	14.6	14.7	14.4
10:07:00 AM	15.4	16.8	14.9	15.7	14.0	14.7	14.9	14.5
10:08:00 AM	15.7	17.2	15.1	16.0	14.0	14.7	14.9	14.5
10:09:00 AM	15.7	17.2	15.2	16.0	14.0	14.8	14.9	14.6
10:10:00 AM	15.5	16.9	15.0	15.8	14.0	14.8	15.0	14.6
10:11:00 AM	15.7	17.1	15.2	16.0	14.0	14.8	15.0	14.6
10:12:00 AM	15.7	17.2	15.3	16.1	15.0	15.0	15.1	15.0
10:13:00 AM	15.8	17.3	15.3	16.1	14.0	14.9	15.1	14.7
10:14:00 AM	16.1	17.5	15.5	16.4	15.0	15.0	15.1	15.0
10:15:00 AM	15.8	17.3	15.3	16.1	15.0	15.1	15.3	15.1
10:16:00 AM	16.0	17.4	15.5	16.3	15.0	15.1	15.3	15.1
10:17:00 AM	16.0	17.4	15.5	16.3	15.0	15.1	15.3	15.1
10:18:00 AM	16.3	17.7	15.7	16.6	15.0	15.1	15.3	15.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:19:00 AM	16.1	17.5	15.6	16.4	15.0	15.1	15.3	15.1
10:20:00 AM	15.8	17.3	15.3	16.1	15.0	15.1	15.3	15.1
10:21:00 AM	16.2	17.6	15.6	16.5	15.0	15.1	15.3	15.1
10:22:00 AM	16.1	17.5	15.5	16.4	15.0	15.1	15.4	15.2
10:23:00 AM	16.3	17.7	15.7	16.6	15.0	15.2	15.4	15.2
10:24:00 AM	16.3	17.7	15.7	16.6	15.0	15.3	15.5	15.3
10:25:00 AM	16.7	18.2	16.2	17.0	15.0	15.4	15.5	15.3
10:26:00 AM	16.0	17.6	15.6	16.4	15.0	15.4	15.5	15.3
10:27:00 AM	16.6	18.0	16.0	16.9	15.0	15.4	15.5	15.3
10:28:00 AM	16.4	17.8	15.9	16.7	15.0	15.4	15.5	15.3
10:29:00 AM	16.9	18.2	16.3	17.1	15.0	15.3	15.5	15.3
10:30:00 AM	16.7	18.2	16.3	17.1	15.0	15.5	15.7	15.4
10:31:00 AM	17.3	18.7	16.8	17.6	15.0	15.5	15.7	15.4
10:32:00 AM	17.0	18.3	16.5	17.3	15.0	15.7	15.9	15.5
10:33:00 AM	16.4	17.9	15.9	16.7	15.0	15.6	15.8	15.5
10:34:00 AM	17.3	18.5	16.6	17.5	15.0	15.7	15.8	15.5
10:35:00 AM	16.6	18.1	16.1	16.9	15.0	15.6	15.8	15.5
10:36:00 AM	16.6	18.1	16.1	16.9	15.0	15.5	15.7	15.4
10:37:00 AM	16.3	17.9	15.8	16.7	15.0	15.8	15.8	15.5
10:38:00 AM	16.5	17.8	15.8	16.7	15.0	15.5	15.6	15.4
10:39:00 AM	16.5	17.9	15.9	16.8	15.0	15.5	15.7	15.4
10:40:00 AM	16.6	17.9	15.9	16.8	15.0	15.5	15.7	15.4
10:41:00 AM	16.3	17.8	15.8	16.6	15.0	15.5	15.7	15.4
10:42:00 AM	16.6	18.1	16.2	17.0	15.0	15.6	15.8	15.5
10:43:00 AM	16.5	17.9	15.9	16.8	15.0	15.8	15.8	15.5
10:44:00 AM	16.4	17.9	15.9	16.7	15.0	15.7	15.8	15.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:45:00 AM	16.4	17.8	15.8	16.7	15.0	15.5	15.7	15.4
10:46:00 AM	16.3	17.8	15.8	16.6	15.0	15.5	15.6	15.4
10:47:00 AM	16.6	18.0	16.0	16.9	15.0	15.6	15.7	15.4
10:48:00 AM	16.1	17.5	15.5	16.4	15.0	15.5	15.7	15.4
10:49:00 AM	16.0	17.5	15.5	16.3	15.0	15.5	15.6	15.4
10:50:00 AM	16.1	17.7	15.6	16.5	15.0	15.4	15.6	15.3
10:51:00 AM	16.3	17.8	15.8	16.6	15.0	15.6	15.6	15.4
10:52:00 AM	16.5	17.9	15.9	16.8	15.0	15.5	15.7	15.4
10:53:00 AM	16.6	18.1	16.1	16.9	15.0	15.6	15.7	15.4
10:54:00 AM	16.8	18.2	16.2	17.1	15.0	15.6	15.7	15.4
10:55:00 AM	16.8	18.2	16.2	17.1	15.0	15.7	15.9	15.5
10:56:00 AM	16.5	18.0	15.9	16.8	15.0	15.7	15.9	15.5
10:57:00 AM	17.0	18.3	16.3	17.2	15.0	15.7	15.8	15.5
10:58:00 AM	16.7	18.2	16.2	17.0	15.0	15.7	15.9	15.5
10:59:00 AM	16.7	18.1	16.1	17.0	15.0	15.8	15.9	15.6
11:00:00 AM	16.6	18.1	16.1	16.9	15.0	15.7	15.9	15.5
11:01:00 AM	16.9	18.3	16.3	17.2	15.0	16.0	16.0	15.7
11:02:00 AM	16.7	18.1	16.2	17.0	15.0	15.9	16.1	15.7
11:03:00 AM	16.7	18.0	16.0	16.9	15.0	15.9	16.0	15.6
11:04:00 AM	16.4	17.9	15.8	16.7	15.0	15.8	15.9	15.6
11:05:00 AM	16.7	18.0	16.1	16.9	15.0	15.8	15.9	15.6
11:06:00 AM	16.5	18.0	16.0	16.8	15.0	15.9	15.9	15.6
11:07:00 AM	16.7	18.1	16.1	17.0	15.0	15.8	16.0	15.6
11:08:00 AM	16.3	17.9	15.8	16.7	15.0	15.8	16.0	15.6
11:09:00 AM	16.6	18.0	16.1	16.9	15.0	15.9	15.9	15.6
11:10:00 AM	16.8	18.2	16.2	17.1	15.0	15.9	16.0	15.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:11:00 AM	16.6	18.1	16.1	16.9	15.0	16.0	16.1	15.7
11:12:00 AM	16.6	18.1	16.1	16.9	15.0	15.9	16.0	15.6
11:13:00 AM	16.6	18.0	15.9	16.8	15.0	15.9	16.1	15.7
11:14:00 AM	16.7	18.1	16.1	17.0	15.0	15.9	16.0	15.6
11:15:00 AM	17.0	18.3	16.3	17.2	15.0	15.9	16.1	15.7
11:16:00 AM	17.0	18.3	16.3	17.2	15.0	16.0	16.2	15.7
11:17:00 AM	16.5	17.9	15.9	16.8	15.0	15.9	16.1	15.7
11:18:00 AM	17.0	18.3	16.3	17.2	15.0	15.9	16.1	15.7
11:19:00 AM	17.0	18.3	16.3	17.2	15.0	16.0	16.2	15.7
11:20:00 AM	16.7	18.1	16.1	17.0	15.0	16.0	16.2	15.7
11:21:00 AM	16.8	18.2	16.1	17.0	15.0	16.0	16.2	15.7
11:22:00 AM	16.6	18.1	16.1	16.9	15.0	16.0	16.2	15.7
11:23:00 AM	16.6	18.1	16.1	16.9	15.0	15.9	16.1	15.7
11:24:00 AM	16.9	18.2	16.2	17.1	15.0	16.0	16.2	15.7
11:25:00 AM	17.0	18.3	16.3	17.2	16.0	16.0	16.2	16.1
11:26:00 AM	16.8	18.2	16.2	17.1	15.0	16.3	16.3	15.9
11:27:00 AM	17.0	18.4	16.5	17.3	15.0	16.1	16.2	15.8
11:28:00 AM	16.9	18.3	16.3	17.2	16.0	16.3	16.3	16.2
11:29:00 AM	17.1	18.5	16.7	17.4	15.0	16.3	16.3	15.9
11:30:00 AM	17.2	18.6	16.6	17.5	16.0	16.4	16.4	16.3
11:31:00 AM	17.0	18.4	16.5	17.3	16.0	16.4	16.4	16.3
11:32:00 AM	17.2	18.5	16.6	17.4	15.0	16.3	16.3	15.9
11:33:00 AM	17.2	18.6	16.7	17.5	16.0	16.4	16.4	16.3
11:34:00 AM	17.2	18.6	16.7	17.5	16.0	16.5	16.5	16.3
11:35:00 AM	17.3	18.8	16.8	17.6	16.0	16.5	16.5	16.3
11:36:00 AM	17.4	18.8	16.8	17.7	16.0	16.5	16.5	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:37:00 AM	17.2	18.7	16.6	17.5	16.0	16.5	16.5	16.3
11:38:00 AM	17.5	18.9	16.9	17.8	16.0	16.5	16.5	16.3
11:39:00 AM	17.3	18.7	16.7	17.6	16.0	16.6	16.6	16.4
11:40:00 AM	17.2	18.5	16.5	17.4	16.0	16.6	16.6	16.4
11:41:00 AM	17.4	18.7	16.8	17.6	16.0	16.5	16.5	16.3
11:42:00 AM	17.4	18.7	16.7	17.6	16.0	16.6	16.6	16.4
11:43:00 AM	17.1	18.6	16.6	17.4	16.0	16.5	16.6	16.4
11:44:00 AM	17.4	18.7	16.8	17.6	16.0	16.5	16.5	16.3
11:45:00 AM	17.5	18.9	16.9	17.8	16.0	16.5	16.5	16.3
11:46:00 AM	17.5	18.9	16.9	17.8	16.0	16.5	16.5	16.3
11:47:00 AM	17.8	19.0	17.0	17.9	16.0	16.6	16.6	16.4
11:48:00 AM	17.5	18.9	16.9	17.8	16.0	16.6	16.6	16.4
11:49:00 AM	17.4	18.9	16.9	17.7	16.0	16.6	16.6	16.4
11:50:00 AM	18.0	19.2	17.2	18.1	16.0	16.5	16.5	16.3
11:51:00 AM	17.8	19.2	17.2	18.1	16.0	16.5	16.6	16.4
11:52:00 AM	18.1	19.5	17.6	18.4	16.0	16.5	16.6	16.4
11:53:00 AM	17.9	19.5	17.6	18.3	16.0	16.8	16.8	16.5
11:54:00 AM	17.7	19.2	17.2	18.0	16.0	16.7	16.9	16.5
11:55:00 AM	18.2	19.6	17.7	18.5	16.0	16.7	16.8	16.5
11:56:00 AM	17.9	19.3	17.3	18.2	16.0	16.7	16.9	16.5
11:57:00 AM	18.6	20.0	18.0	18.9	16.0	16.8	17.0	16.6
11:58:00 AM	17.9	19.3	17.3	18.2	16.0	16.9	17.1	16.7
11:59:00 AM	18.2	19.6	17.6	18.5	16.0	16.8	16.9	16.6
12:00:00 PM	18.1	19.7	17.9	18.6	16.0	16.9	17.0	16.6
12:01:00 PM	18.3	19.8	17.8	18.6	17.0	17.0	17.2	17.1
12:02:00 PM	18.3	19.7	17.7	18.6	17.0	17.0	17.1	17.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:03:00 PM	18.1	19.5	17.6	18.4	16.0	17.0	17.1	16.7
12:04:00 PM	17.8	19.2	17.3	18.1	17.0	17.0	17.1	17.0
12:05:00 PM	17.7	19.1	17.3	18.0	17.0	16.8	16.9	16.9
12:06:00 PM	17.7	19.2	17.3	18.1	16.0	16.7	16.9	16.5
12:07:00 PM	17.5	19.0	17.1	17.9	16.0	16.7	16.9	16.5
12:08:00 PM	17.7	19.1	17.2	18.0	16.0	16.8	16.9	16.6
12:09:00 PM	17.6	19.1	17.2	18.0	16.0	16.8	17.0	16.6
12:10:00 PM	17.4	18.9	17.0	17.8	16.0	16.8	17.0	16.6
12:11:00 PM	17.4	18.8	17.0	17.7	16.0	16.7	16.8	16.5
12:12:00 PM	17.4	18.8	16.9	17.7	16.0	16.7	16.9	16.5
12:13:00 PM	17.4	18.8	16.9	17.7	16.0	16.7	16.9	16.5
12:14:00 PM	17.7	19.0	17.1	17.9	16.0	16.7	16.9	16.5
12:15:00 PM	18.0	19.3	17.4	18.2	16.0	16.7	16.9	16.5
12:16:00 PM	18.1	19.6	17.6	18.4	17.0	16.9	17.1	17.0
12:17:00 PM	18.6	20.0	18.2	18.9	16.0	17.0	17.2	16.7
12:18:00 PM	18.5	20.0	18.0	18.8	16.0	17.1	17.2	16.8
12:19:00 PM	17.8	19.2	17.4	18.1	17.0	17.0	17.2	17.1
12:20:00 PM	17.6	19.1	17.2	18.0	16.0	16.8	17.0	16.6
12:21:00 PM	17.8	19.3	17.4	18.2	16.0	16.8	17.0	16.6
12:22:00 PM	17.8	19.3	17.4	18.2	16.0	16.8	17.0	16.6
12:23:00 PM	18.3	19.7	17.9	18.6	16.0	17.0	17.1	16.7
12:24:00 PM	18.3	19.8	17.9	18.7	17.0	17.1	17.3	17.1
12:25:00 PM	18.1	19.6	17.7	18.5	17.0	17.1	17.3	17.1
12:26:00 PM	17.8	19.3	17.4	18.2	17.0	17.1	17.3	17.1
12:27:00 PM	17.4	18.8	16.9	17.7	17.0	17.0	17.2	17.1
12:28:00 PM	17.2	18.7	16.7	17.5	17.0	17.0	17.1	17.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:29:00 PM	17.3	18.8	16.8	17.6	16.0	16.9	17.0	16.6
12:30:00 PM	17.2	18.7	16.7	17.5	17.0	16.9	17.0	17.0
12:31:00 PM	17.0	18.6	16.6	17.4	16.0	16.8	16.9	16.6
12:32:00 PM	17.1	18.5	16.5	17.4	16.0	16.7	16.9	16.5
12:33:00 PM	17.0	18.5	16.5	17.3	16.0	16.7	16.8	16.5
12:34:00 PM	17.1	18.5	16.6	17.4	16.0	16.7	16.8	16.5
12:35:00 PM	16.9	18.4	16.5	17.3	16.0	16.7	16.9	16.5
12:36:00 PM	17.0	18.5	16.6	17.4	16.0	16.7	16.8	16.5
12:37:00 PM	17.0	18.5	16.5	17.3	16.0	16.7	16.8	16.5
12:38:00 PM	17.0	18.3	16.5	17.3	16.0	16.7	16.8	16.5
12:39:00 PM	16.9	18.3	16.5	17.2	16.0	16.6	16.7	16.4
12:40:00 PM	17.1	18.4	16.7	17.4	16.0	16.6	16.7	16.4
12:41:00 PM	17.0	18.5	16.6	17.4	16.0	16.6	16.7	16.4
12:42:00 PM	16.8	18.3	16.5	17.2	16.0	16.6	16.7	16.4
12:43:00 PM	16.8	18.3	16.4	17.2	16.0	16.6	16.7	16.4
12:44:00 PM	17.0	18.4	16.5	17.3	16.0	16.6	16.7	16.4
12:45:00 PM	16.8	18.3	16.4	17.2	16.0	16.6	16.7	16.4
12:46:00 PM	17.0	18.4	16.6	17.3	16.0	16.6	16.7	16.4
12:47:00 PM	17.1	18.6	16.7	17.5	16.0	16.6	16.7	16.4
12:48:00 PM	17.1	18.5	16.6	17.4	16.0	16.6	16.7	16.4
12:49:00 PM	16.9	18.3	16.6	17.3	16.0	16.6	16.7	16.4
12:50:00 PM	16.8	18.3	16.5	17.2	16.0	16.6	16.7	16.4
12:51:00 PM	17.0	18.4	16.6	17.3	16.0	16.6	16.7	16.4
12:52:00 PM	17.2	18.5	16.9	17.5	16.0	16.5	16.7	16.4
12:53:00 PM	17.1	18.6	16.9	17.5	16.0	16.6	16.7	16.4
12:54:00 PM	17.0	18.5	16.7	17.4	16.0	16.6	16.7	16.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:55:00 PM	17.1	18.5	17.0	17.5	16.0	16.6	16.8	16.5
12:56:00 PM	17.1	18.6	16.9	17.5	16.0	16.6	16.8	16.5
12:57:00 PM	17.1	18.4	16.7	17.4	16.0	16.6	16.8	16.5
12:58:00 PM	17.0	18.4	16.7	17.4	16.0	16.5	16.7	16.4
12:59:00 PM	17.0	18.5	16.8	17.4	16.0	16.6	16.7	16.4
1:00:00 PM	17.0	18.5	16.8	17.4	16.0	16.6	16.7	16.4
1:01:00 PM	16.9	18.4	16.7	17.3	16.0	16.5	16.6	16.4
1:02:00 PM	16.9	18.4	16.7	17.3	16.0	16.5	16.7	16.4
1:03:00 PM	16.9	18.4	16.7	17.3	16.0	16.5	16.6	16.4
1:04:00 PM	17.0	18.4	16.8	17.4	16.0	16.5	16.6	16.4
1:05:00 PM	16.9	18.4	16.7	17.3	16.0	16.5	16.6	16.4
1:06:00 PM	16.8	18.3	16.6	17.2	16.0	16.4	16.6	16.3
1:07:00 PM	16.9	18.4	16.8	17.4	16.0	16.5	16.6	16.4
1:08:00 PM	16.8	18.3	16.7	17.3	16.0	16.5	16.6	16.4
1:09:00 PM	16.9	18.4	16.7	17.3	16.0	16.5	16.6	16.4
1:10:00 PM	16.8	18.3	16.7	17.3	16.0	16.5	16.6	16.4
1:11:00 PM	16.7	18.2	16.5	17.1	16.0	16.5	16.6	16.4
1:12:00 PM	16.7	18.2	16.6	17.2	16.0	16.4	16.5	16.3
1:13:00 PM	16.7	18.1	16.5	17.1	16.0	16.4	16.5	16.3
1:14:00 PM	16.6	18.1	16.4	17.0	16.0	16.4	16.5	16.3
1:15:00 PM	16.6	18.0	16.4	17.0	16.0	16.3	16.5	16.3
1:16:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
1:17:00 PM	16.6	18.0	16.5	17.0	16.0	16.5	16.5	16.3
1:18:00 PM	16.6	18.0	16.4	17.0	16.0	16.3	16.5	16.3
1:19:00 PM	16.6	18.0	16.4	17.0	16.0	16.3	16.4	16.2
1:20:00 PM	16.6	18.0	16.4	17.0	16.0	16.3	16.4	16.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:21:00 PM	16.5	18.0	16.4	17.0	16.0	16.4	16.4	16.3
1:22:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.4	16.2
1:23:00 PM	16.8	18.1	16.5	17.1	16.0	16.3	16.4	16.2
1:24:00 PM	16.8	18.2	16.5	17.2	16.0	16.3	16.5	16.3
1:25:00 PM	16.7	18.2	16.6	17.2	15.0	16.3	16.5	15.9
1:26:00 PM	16.6	18.1	16.5	17.1	16.0	16.3	16.5	16.3
1:27:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.4	16.2
1:28:00 PM	16.7	18.2	16.6	17.2	16.0	16.3	16.4	16.2
1:29:00 PM	16.8	18.2	16.6	17.2	16.0	16.3	16.5	16.3
1:30:00 PM	16.6	18.1	16.4	17.0	16.0	16.3	16.5	16.3
1:31:00 PM	16.7	18.1	16.4	17.1	16.0	16.3	16.4	16.2
1:32:00 PM	16.6	18.1	16.5	17.1	16.0	16.3	16.5	16.3
1:33:00 PM	16.8	18.1	16.4	17.1	16.0	16.3	16.5	16.3
1:34:00 PM	16.6	18.1	16.5	17.1	15.0	16.5	16.5	16.0
1:35:00 PM	16.9	18.3	16.7	17.3	16.0	16.3	16.5	16.3
1:36:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
1:37:00 PM	16.9	18.3	16.6	17.3	16.0	16.3	16.5	16.3
1:38:00 PM	16.9	18.3	16.7	17.3	16.0	16.3	16.5	16.3
1:39:00 PM	16.6	18.1	16.5	17.1	16.0	16.5	16.5	16.3
1:40:00 PM	16.8	18.2	16.5	17.2	16.0	16.3	16.5	16.3
1:41:00 PM	16.6	18.2	16.5	17.1	16.0	16.4	16.5	16.3
1:42:00 PM	16.5	18.1	16.3	17.0	16.0	16.3	16.5	16.3
1:43:00 PM	16.5	18.1	16.4	17.0	16.0	16.5	16.5	16.3
1:44:00 PM	16.5	18.1	16.5	17.0	16.0	16.5	16.5	16.3
1:45:00 PM	16.5	18.0	16.4	17.0	16.0	16.5	16.5	16.3
1:46:00 PM	16.7	18.0	16.4	17.0	16.0	16.3	16.5	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:47:00 PM	16.6	18.0	16.2	16.9	16.0	16.3	16.5	16.3
1:48:00 PM	16.6	18.0	16.3	17.0	16.0	16.3	16.4	16.2
1:49:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.4	16.2
1:50:00 PM	16.8	18.2	16.5	17.2	16.0	16.3	16.5	16.3
1:51:00 PM	16.8	18.2	16.6	17.2	16.0	16.3	16.5	16.3
1:52:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
1:53:00 PM	16.7	18.1	16.4	17.1	15.0	16.3	16.5	15.9
1:54:00 PM	16.7	18.1	16.4	17.1	16.0	16.3	16.5	16.3
1:55:00 PM	16.9	18.2	16.5	17.2	16.0	16.3	16.5	16.3
1:56:00 PM	17.0	18.3	16.7	17.3	16.0	16.3	16.5	16.3
1:57:00 PM	16.9	18.3	16.6	17.3	16.0	16.3	16.5	16.3
1:58:00 PM	16.8	18.3	16.7	17.3	16.0	16.4	16.5	16.3
1:59:00 PM	16.9	18.3	16.7	17.3	16.0	16.4	16.5	16.3
2:00:00 PM	16.8	18.2	16.6	17.2	16.0	16.3	16.5	16.3
2:01:00 PM	16.8	18.2	16.6	17.2	16.0	16.4	16.5	16.3
2:02:00 PM	16.8	18.2	16.6	17.2	16.0	16.4	16.5	16.3
2:03:00 PM	16.8	18.2	16.6	17.2	16.0	16.4	16.6	16.3
2:04:00 PM	16.9	18.3	16.7	17.3	16.0	16.4	16.5	16.3
2:05:00 PM	16.7	18.2	16.7	17.2	16.0	16.5	16.5	16.3
2:06:00 PM	16.8	18.2	16.5	17.2	16.0	16.4	16.5	16.3
2:07:00 PM	16.9	18.2	16.5	17.2	16.0	16.3	16.5	16.3
2:08:00 PM	16.8	18.4	16.7	17.3	16.0	16.4	16.5	16.3
2:09:00 PM	16.8	18.3	16.8	17.3	16.0	16.6	16.5	16.4
2:10:00 PM	17.0	18.4	16.8	17.4	16.0	16.4	16.6	16.3
2:11:00 PM	16.7	18.2	16.6	17.2	16.0	16.6	16.6	16.4
2:12:00 PM	17.0	18.3	16.7	17.3	16.0	16.4	16.6	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:13:00 PM	16.7	18.1	16.5	17.1	16.0	16.4	16.5	16.3
2:14:00 PM	16.8	18.2	16.6	17.2	16.0	16.4	16.5	16.3
2:15:00 PM	16.6	18.1	16.5	17.1	16.0	16.4	16.5	16.3
2:16:00 PM	16.7	18.0	16.5	17.1	16.0	16.3	16.5	16.3
2:17:00 PM	16.5	18.0	16.3	16.9	16.0	16.3	16.4	16.2
2:18:00 PM	16.6	18.0	16.3	17.0	16.0	16.3	16.4	16.2
2:19:00 PM	16.6	18.0	16.4	17.0	16.0	16.3	16.4	16.2
2:20:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
2:21:00 PM	16.6	18.1	16.5	17.1	16.0	16.5	16.5	16.3
2:22:00 PM	16.8	18.2	16.5	17.2	16.0	16.3	16.5	16.3
2:23:00 PM	16.7	18.2	16.6	17.2	16.0	16.3	16.5	16.3
2:24:00 PM	16.7	18.1	16.5	17.1	16.0	16.4	16.5	16.3
2:25:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
2:26:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
2:27:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
2:28:00 PM	16.5	17.9	16.3	16.9	16.0	16.3	16.4	16.2
2:29:00 PM	16.5	18.0	16.4	17.0	15.0	16.2	16.4	15.9
2:30:00 PM	16.5	18.0	16.5	17.0	16.0	16.3	16.4	16.2
2:31:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.4	16.2
2:32:00 PM	16.6	18.1	16.4	17.0	15.0	16.3	16.4	15.9
2:33:00 PM	16.5	18.0	16.4	17.0	16.0	16.3	16.4	16.2
2:34:00 PM	16.5	18.0	16.5	17.0	16.0	16.3	16.4	16.2
2:35:00 PM	16.8	18.2	16.6	17.2	16.0	16.3	16.4	16.2
2:36:00 PM	16.7	18.0	16.5	17.1	16.0	16.4	16.5	16.3
2:37:00 PM	16.5	18.0	16.5	17.0	16.0	16.3	16.5	16.3
2:38:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:39:00 PM	16.5	18.0	16.5	17.0	16.0	16.5	16.5	16.3
2:40:00 PM	16.7	18.1	16.5	17.1	16.0	16.3	16.5	16.3
2:41:00 PM	16.6	18.0	16.4	17.0	16.0	16.2	16.4	16.2
2:42:00 PM	16.5	18.0	16.5	17.0	16.0	16.2	16.4	16.2
2:43:00 PM	16.5	18.0	16.5	17.0	16.0	16.2	16.3	16.2
2:44:00 PM	16.5	18.0	16.4	17.0	16.0	16.4	16.4	16.3
2:45:00 PM	16.3	17.9	16.3	16.8	16.0	16.2	16.4	16.2
2:46:00 PM	16.4	18.0	16.4	16.9	16.0	16.2	16.3	16.2
2:47:00 PM	16.5	18.0	16.4	17.0	16.0	16.2	16.3	16.2
2:48:00 PM	16.5	18.1	16.5	17.0	16.0	16.2	16.3	16.2
2:49:00 PM	16.5	18.1	16.5	17.0	15.0	16.2	16.3	15.8
2:50:00 PM	16.5	18.1	16.5	17.0	16.0	16.2	16.4	16.2
2:51:00 PM	16.6	18.2	16.6	17.1	16.0	16.2	16.4	16.2
2:52:00 PM	16.6	18.1	16.5	17.1	15.0	16.2	16.4	15.9
2:53:00 PM	16.6	18.0	16.5	17.0	15.0	16.2	16.3	15.8
2:54:00 PM	16.6	18.1	16.5	17.1	16.0	16.4	16.4	16.3
2:55:00 PM	17.0	18.4	16.8	17.4	16.0	16.2	16.4	16.2
2:56:00 PM	16.7	18.2	16.6	17.2	16.0	16.3	16.4	16.2
2:57:00 PM	16.6	18.2	16.5	17.1	16.0	16.2	16.4	16.2
2:58:00 PM	16.9	18.3	16.7	17.3	15.0	16.2	16.4	15.9
2:59:00 PM	16.9	18.3	16.8	17.3	16.0	16.3	16.5	16.3
3:00:00 PM	16.9	18.4	16.8	17.4	16.0	16.3	16.5	16.3
3:01:00 PM	16.8	18.3	16.8	17.3	16.0	16.5	16.5	16.3
3:02:00 PM	16.7	18.2	16.6	17.2	16.0	16.3	16.5	16.3
3:03:00 PM	16.9	18.3	16.9	17.4	16.0	16.5	16.5	16.3
3:04:00 PM	16.7	18.2	16.7	17.2	16.0	16.3	16.5	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:05:00 PM	16.6	18.1	16.6	17.1	16.0	16.3	16.5	16.3
3:06:00 PM	16.6	18.1	16.6	17.1	16.0	16.3	16.4	16.2
3:07:00 PM	16.6	18.2	16.7	17.2	16.0	16.3	16.4	16.2
3:08:00 PM	16.8	18.2	16.6	17.2	16.0	16.3	16.5	16.3
3:09:00 PM	16.9	18.2	16.7	17.3	16.0	16.3	16.5	16.3
3:10:00 PM	17.0	18.4	16.9	17.4	16.0	16.4	16.5	16.3
3:11:00 PM	17.0	18.5	17.0	17.5	16.0	16.4	16.6	16.3
3:12:00 PM	17.2	18.6	17.1	17.6	16.0	16.4	16.6	16.3
3:13:00 PM	17.3	18.7	17.3	17.8	16.0	16.6	16.6	16.4
3:14:00 PM	16.9	18.4	16.9	17.4	16.0	16.4	16.6	16.3
3:15:00 PM	17.0	18.4	16.8	17.4	16.0	16.4	16.6	16.3
3:16:00 PM	17.3	18.8	17.3	17.8	16.0	16.4	16.6	16.3
3:17:00 PM	17.5	19.0	17.4	18.0	16.0	16.6	16.6	16.4
3:18:00 PM	17.1	18.6	17.0	17.6	16.0	16.6	16.6	16.4
3:19:00 PM	17.3	18.6	17.1	17.7	16.0	16.6	16.6	16.4
3:20:00 PM	17.9	19.3	17.6	18.3	16.0	16.6	16.6	16.4
3:21:00 PM	18.1	19.6	17.7	18.5	16.0	16.7	16.7	16.5
3:22:00 PM	19.3	20.9	19.1	19.8	16.0	16.5	16.7	16.4
3:23:00 PM	18.7	20.4	18.6	19.2	16.0	16.8	16.8	16.5
3:24:00 PM	19.1	20.7	19.0	19.6	16.0	16.7	16.9	16.5
3:25:00 PM	18.1	19.6	18.0	18.6	16.0	16.8	16.9	16.6
3:26:00 PM	17.7	19.2	17.5	18.1	16.0	16.7	16.9	16.5
3:27:00 PM	17.8	19.3	17.7	18.3	16.0	16.7	16.9	16.5
3:28:00 PM	18.2	19.8	18.1	18.7	16.0	16.7	16.8	16.5
3:29:00 PM	18.3	19.9	18.2	18.8	16.0	16.7	16.9	16.5
3:30:00 PM	18.4	20.0	18.3	18.9	16.0	16.7	16.9	16.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:31:00 PM	18.1	19.6	18.0	18.6	16.0	16.8	17.0	16.6
3:32:00 PM	17.7	19.2	17.6	18.2	16.0	16.8	16.9	16.6
3:33:00 PM	17.4	18.9	17.3	17.9	16.0	16.7	16.9	16.5
3:34:00 PM	17.2	18.7	17.1	17.7	16.0	16.7	16.8	16.5
3:35:00 PM	17.3	18.7	17.1	17.7	16.0	16.7	16.8	16.5
3:36:00 PM	17.4	18.7	17.1	17.7	16.0	16.7	16.8	16.5
3:37:00 PM	17.6	18.8	17.2	17.9	16.0	16.7	16.9	16.5
3:38:00 PM	17.8	19.1	17.3	18.1	16.0	16.7	16.9	16.5
3:39:00 PM	17.4	18.8	17.1	17.8	16.0	16.8	16.9	16.6
3:40:00 PM	16.9	18.5	16.8	17.4	16.0	16.7	16.8	16.5
3:41:00 PM	17.1	18.4	16.9	17.5	16.0	16.6	16.8	16.5
3:42:00 PM	17.0	18.4	16.9	17.4	16.0	16.6	16.7	16.4
3:43:00 PM	16.9	18.4	16.8	17.4	16.0	16.6	16.7	16.4
3:44:00 PM	17.3	18.6	17.1	17.7	16.0	16.5	16.7	16.4
3:45:00 PM	17.6	19.1	17.4	18.0	16.0	16.5	16.7	16.4
3:46:00 PM	18.2	19.7	17.7	18.5	16.0	16.5	16.7	16.4
3:47:00 PM	18.6	19.9	17.7	18.7	16.0	16.6	16.8	16.5
3:48:00 PM	17.5	18.9	17.0	17.8	16.0	16.6	16.7	16.4
3:49:00 PM	16.9	18.4	16.7	17.3	16.0	16.6	16.7	16.4
3:50:00 PM	17.0	18.4	16.7	17.4	16.0	16.6	16.7	16.4
3:51:00 PM	16.8	18.2	16.6	17.2	16.0	16.5	16.7	16.4
3:52:00 PM	16.9	18.3	16.6	17.3	16.0	16.5	16.6	16.4
3:53:00 PM	16.8	18.3	16.6	17.2	16.0	16.5	16.6	16.4
3:54:00 PM	16.8	18.2	16.6	17.2	16.0	16.5	16.6	16.4
3:55:00 PM	16.6	18.2	16.5	17.1	16.0	16.4	16.6	16.3
3:56:00 PM	16.7	18.1	16.5	17.1	16.0	16.4	16.6	16.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:57:00 PM	16.6	18.0	16.4	17.0	16.0	16.4	16.5	16.3
3:58:00 PM	16.7	18.0	16.3	17.0	16.0	16.4	16.5	16.3
3:59:00 PM	16.5	17.9	16.1	16.8	16.0	16.3	16.5	16.3
4:00:00 PM	16.5	17.9	16.1	16.8	16.0	16.3	16.5	16.3
4:01:00 PM	16.7	18.0	16.2	17.0	16.0	16.3	16.4	16.2
4:02:00 PM	16.7	18.1	16.4	17.1	16.0	16.3	16.4	16.2
4:03:00 PM	17.0	18.4	16.7	17.4	16.0	16.3	16.4	16.2
4:04:00 PM	16.3	17.8	16.2	16.8	16.0	16.4	16.4	16.3
4:05:00 PM	16.3	17.6	16.0	16.6	16.0	16.3	16.4	16.2
4:06:00 PM	16.2	17.7	16.1	16.7	16.0	16.3	16.4	16.2
4:07:00 PM	16.2	17.7	16.0	16.6	16.0	16.2	16.3	16.2
4:08:00 PM	16.1	17.5	15.9	16.5	16.0	16.2	16.3	16.2
4:09:00 PM	16.3	17.6	16.0	16.6	16.0	16.2	16.3	16.2
4:10:00 PM	16.3	17.7	16.1	16.7	15.0	16.2	16.3	15.8
4:11:00 PM	16.1	17.5	15.8	16.5	15.0	16.1	16.3	15.8
4:12:00 PM	16.6	18.0	16.4	17.0	15.0	16.1	16.3	15.8
4:13:00 PM	16.8	18.2	16.6	17.2	16.0	16.1	16.3	16.1
4:14:00 PM	17.1	18.4	16.9	17.5	16.0	16.2	16.2	16.1
4:15:00 PM	17.1	18.6	16.9	17.5	15.0	16.3	16.2	15.8
4:16:00 PM	17.0	18.4	16.9	17.4	15.0	16.1	16.2	15.8
4:17:00 PM	16.7	18.2	16.5	17.1	15.0	16.1	16.2	15.8
4:18:00 PM	16.8	18.3	16.6	17.2	15.0	16.2	16.2	15.8
4:19:00 PM	16.7	18.1	16.4	17.1	15.0	16.1	16.2	15.8
4:20:00 PM	16.9	18.2	16.5	17.2	15.0	16.0	16.2	15.7
4:21:00 PM	17.0	18.4	16.7	17.4	15.0	16.2	16.2	15.8
4:22:00 PM	16.9	18.3	16.7	17.3	16.0	16.2	16.2	16.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:23:00 PM	16.5	17.9	16.3	16.9	15.0	16.0	16.2	15.7
4:24:00 PM	16.3	17.8	16.1	16.7	15.0	16.0	16.2	15.7
4:25:00 PM	16.1	17.5	15.8	16.5	16.0	16.2	16.1	16.1
4:26:00 PM	15.9	17.2	15.5	16.2	16.0	16.1	16.1	16.1
4:27:00 PM	15.7	17.1	15.5	16.1	15.0	16.0	16.1	15.7
4:28:00 PM	15.7	17.0	15.5	16.1	15.0	15.9	16.1	15.7
4:29:00 PM	15.6	17.1	15.4	16.0	15.0	16.1	16.0	15.7
4:30:00 PM	15.5	17.0	15.3	15.9	15.0	16.0	16.0	15.7
4:31:00 PM	15.4	16.9	15.2	15.8	15.0	16.0	16.0	15.7
4:32:00 PM	15.5	16.9	15.3	15.9	15.0	16.0	16.0	15.7
4:33:00 PM	15.5	16.9	15.2	15.9	15.0	16.0	15.9	15.6
4:34:00 PM	15.3	16.8	15.1	15.7	15.0	16.0	15.9	15.6
4:35:00 PM	15.2	16.7	15.0	15.6	15.0	15.9	15.9	15.6
4:36:00 PM	15.3	16.8	15.1	15.7	15.0	15.9	15.9	15.6
4:37:00 PM	15.3	16.8	15.1	15.7	15.0	15.7	15.8	15.5
4:38:00 PM	15.3	16.7	15.1	15.7	15.0	15.7	15.8	15.5
4:39:00 PM	15.1	16.6	14.9	15.5	15.0	15.7	15.9	15.5
4:40:00 PM	15.1	16.6	14.9	15.5	15.0	15.7	15.8	15.5
4:41:00 PM	15.4	16.7	15.1	15.7	15.0	15.7	15.8	15.5
4:42:00 PM	15.3	16.6	14.9	15.6	15.0	15.8	15.8	15.5
4:43:00 PM	15.2	16.5	14.9	15.5	15.0	15.8	15.8	15.5
4:44:00 PM	15.2	16.4	14.9	15.5	15.0	15.8	15.8	15.5
4:45:00 PM	15.0	16.3	14.7	15.3	15.0	15.8	15.8	15.5
4:46:00 PM	14.9	16.3	14.7	15.3	15.0	15.8	15.7	15.5
4:47:00 PM	14.6	16.0	14.5	15.0	15.0	15.7	15.6	15.4
4:48:00 PM	14.7	16.2	14.5	15.1	15.0	15.5	15.6	15.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:49:00 PM	14.4	15.9	14.3	14.9	15.0	15.5	15.6	15.4
4:50:00 PM	14.3	15.6	14.2	14.7	15.0	15.6	15.5	15.4
4:51:00 PM	14.5	15.7	14.2	14.8	15.0	15.4	15.5	15.3
4:52:00 PM	14.5	15.7	14.3	14.8	15.0	15.4	15.5	15.3
4:53:00 PM	14.3	15.7	14.1	14.7	15.0	15.4	15.5	15.3
4:54:00 PM	14.4	15.8	14.2	14.8	15.0	15.3	15.4	15.2
4:55:00 PM	14.2	15.5	14.0	14.6	15.0	15.3	15.4	15.2
4:56:00 PM	14.0	15.4	13.9	14.4	15.0	15.3	15.4	15.2
4:57:00 PM	14.0	15.4	13.9	14.4	15.0	15.3	15.3	15.2
4:58:00 PM	14.0	15.4	13.9	14.4	15.0	15.3	15.3	15.2
4:59:00 PM	14.2	15.4	13.9	14.5	15.0	15.2	15.3	15.2
5:00:00 PM	14.4	15.8	14.2	14.8	15.0	15.2	15.3	15.2
5:01:00 PM	14.2	15.5	14.0	14.6	15.0	15.3	15.4	15.2
5:02:00 PM	13.9	15.3	13.7	14.3	15.0	15.3	15.4	15.2
5:03:00 PM	13.8	15.2	13.7	14.2	15.0	15.1	15.2	15.1
5:04:00 PM	14.1	15.4	13.8	14.4	15.0	15.2	15.3	15.2
5:05:00 PM	14.0	15.3	13.7	14.3	15.0	15.2	15.3	15.2
5:06:00 PM	14.1	15.5	13.9	14.5	15.0	15.1	15.3	15.1
5:07:00 PM	14.2	15.5	14.0	14.6	15.0	15.2	15.3	15.2
5:08:00 PM	14.2	15.5	14.0	14.6	15.0	15.2	15.3	15.2
5:09:00 PM	14.2	15.4	13.9	14.5	15.0	15.2	15.3	15.2
5:10:00 PM	14.1	15.2	13.7	14.3	15.0	15.1	15.2	15.1
5:11:00 PM	14.1	15.4	13.9	14.5	15.0	15.2	15.3	15.2
5:12:00 PM	14.1	15.4	13.7	14.4	15.0	15.3	15.3	15.2
5:13:00 PM	14.2	15.3	13.9	14.5	15.0	15.3	15.4	15.2
5:14:00 PM	14.0	15.3	13.8	14.4	15.0	15.2	15.3	15.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:15:00 PM	14.1	15.4	13.9	14.5	15.0	15.2	15.3	15.2
5:16:00 PM	14.0	15.3	13.8	14.4	15.0	15.3	15.4	15.2
5:17:00 PM	13.8	15.2	13.6	14.2	15.0	15.2	15.3	15.2
5:18:00 PM	13.6	15.0	13.5	14.0	15.0	15.1	15.2	15.1
5:19:00 PM	13.5	14.8	13.3	13.9	15.0	15.1	15.1	15.1
5:20:00 PM	13.5	14.8	13.3	13.9	15.0	15.0	15.0	15.0
5:21:00 PM	13.7	15.0	13.5	14.1	15.0	15.0	15.0	15.0
5:22:00 PM	13.7	14.9	13.5	14.0	14.0	15.0	15.0	14.7
5:23:00 PM	13.6	15.0	13.5	14.0	15.0	15.0	15.1	15.0
5:24:00 PM	13.6	15.0	13.5	14.0	15.0	15.1	15.1	15.1
5:25:00 PM	13.6	14.8	13.3	13.9	15.0	15.0	15.0	15.0
5:26:00 PM	13.7	15.0	13.5	14.1	15.0	15.0	15.1	15.0
5:27:00 PM	13.7	15.1	13.7	14.2	14.0	15.0	15.1	14.7
5:28:00 PM	13.6	15.1	13.7	14.1	14.0	15.0	15.0	14.7
5:29:00 PM	13.6	15.1	13.6	14.1	14.0	15.0	15.0	14.7
5:30:00 PM	13.7	15.2	13.7	14.2	14.0	15.0	15.0	14.7
5:31:00 PM	13.8	15.2	13.7	14.2	15.0	15.0	15.0	15.0
5:32:00 PM	13.7	15.1	13.5	14.1	14.0	15.0	15.1	14.7
5:33:00 PM	13.8	15.1	13.5	14.1	15.0	15.0	15.1	15.0
5:34:00 PM	13.6	15.1	13.5	14.1	14.0	15.0	15.0	14.7
5:35:00 PM	13.9	15.2	13.6	14.2	15.0	15.0	15.0	15.0
5:36:00 PM	13.8	15.1	13.5	14.1	15.0	15.0	15.1	15.0
5:37:00 PM	13.7	15.2	13.6	14.2	15.0	15.1	15.2	15.1
5:38:00 PM	13.9	15.3	13.7	14.3	15.0	15.1	15.2	15.1
5:39:00 PM	14.0	15.4	13.9	14.4	15.0	15.1	15.3	15.1
5:40:00 PM	13.9	15.4	13.8	14.4	15.0	15.1	15.3	15.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:41:00 PM	13.9	15.4	13.8	14.4	15.0	15.0	15.1	15.0
5:42:00 PM	14.2	15.5	14.0	14.6	14.0	15.0	15.1	14.7
5:43:00 PM	14.4	15.7	14.2	14.8	15.0	15.0	15.1	15.0
5:44:00 PM	14.3	15.6	14.1	14.7	14.0	15.0	15.1	14.7
5:45:00 PM	14.5	15.8	14.3	14.9	15.0	15.0	15.1	15.0
5:46:00 PM	14.3	15.8	14.3	14.8	15.0	15.0	15.2	15.1
5:47:00 PM	14.2	15.7	14.1	14.7	15.0	15.1	15.2	15.1
5:48:00 PM	14.2	15.7	14.2	14.7	15.0	15.1	15.2	15.1
5:49:00 PM	14.0	15.5	14.0	14.5	15.0	15.0	15.1	15.0
5:50:00 PM	14.1	15.6	14.1	14.6	15.0	14.9	15.0	15.0
5:51:00 PM	14.2	15.6	14.1	14.6	15.0	14.9	15.0	15.0
5:52:00 PM	14.1	15.5	14.1	14.6	15.0	14.9	15.0	15.0
5:53:00 PM	14.1	15.4	14.0	14.5	14.0	14.9	15.0	14.6
5:54:00 PM	14.1	15.6	14.1	14.6	14.0	14.9	15.0	14.6
5:55:00 PM	14.1	15.6	14.1	14.6	14.0	14.9	15.0	14.6
5:56:00 PM	13.9	15.5	13.9	14.4	14.0	14.9	15.1	14.7
5:57:00 PM	14.0	15.5	13.9	14.5	15.0	14.9	15.1	15.0
5:58:00 PM	14.2	15.7	14.1	14.7	15.0	14.9	15.1	15.0
5:59:00 PM	14.2	15.5	14.1	14.6	15.0	14.9	15.0	15.0
6:00:00 PM	14.1	15.4	13.4	14.3	14.0	14.7	14.9	14.5
6:01:00 PM	14.1	15.5	13.5	14.4	15.0	14.7	14.9	14.9
6:02:00 PM	14.1	15.5	13.6	14.4	15.0	14.7	14.9	14.9
6:03:00 PM	14.0	15.4	13.4	14.3	14.0	14.7	14.9	14.5
6:04:00 PM	14.1	15.5	13.5	14.4	14.0	14.7	14.8	14.5
6:05:00 PM	14.2	15.5	13.5	14.4	14.0	14.7	14.9	14.5
6:06:00 PM	14.0	15.4	13.4	14.3	14.0	14.7	14.9	14.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:07:00 PM	14.2	15.5	13.5	14.4	14.0	14.7	14.8	14.5
6:08:00 PM	14.2	15.6	13.6	14.5	14.0	14.7	14.8	14.5
6:09:00 PM	14.3	15.7	13.7	14.6	14.0	14.7	14.9	14.5
6:10:00 PM	14.4	15.7	13.7	14.6	14.0	14.7	14.9	14.5
6:11:00 PM	14.2	15.6	13.6	14.5	14.0	14.7	14.9	14.5
6:12:00 PM	13.9	15.3	13.4	14.2	14.0	14.7	14.9	14.5
6:13:00 PM	14.2	15.6	13.6	14.5	14.0	14.7	14.8	14.5
6:14:00 PM	14.2	15.7	13.7	14.5	14.0	14.7	14.8	14.5
6:15:00 PM	14.3	15.6	13.7	14.5	14.0	14.7	14.8	14.5
6:16:00 PM	14.3	15.6	13.6	14.5	14.0	14.7	14.8	14.5
6:17:00 PM	14.2	15.7	13.6	14.5	14.0	14.7	14.8	14.5
6:18:00 PM	14.2	15.5	13.6	14.4	14.0	14.7	14.8	14.5
6:19:00 PM	14.3	15.6	13.6	14.5	14.0	14.7	14.8	14.5
6:20:00 PM	14.3	15.5	13.6	14.5	14.0	14.7	14.8	14.5
6:21:00 PM	14.3	15.6	13.6	14.5	14.0	14.7	14.8	14.5
6:22:00 PM	14.1	15.5	13.5	14.4	14.0	14.7	14.8	14.5
6:23:00 PM	14.3	15.6	13.5	14.5	14.0	14.7	14.8	14.5
6:24:00 PM	14.0	15.4	13.2	14.2	14.0	14.6	14.8	14.5
6:25:00 PM	13.9	15.3	13.2	14.1	14.0	14.7	14.8	14.5
6:26:00 PM	14.0	15.4	13.2	14.2	14.0	14.6	14.7	14.4
6:27:00 PM	14.0	15.0	13.1	14.0	14.0	14.6	14.7	14.4
6:28:00 PM	13.9	14.8	13.1	13.9	14.0	14.6	14.7	14.4
6:29:00 PM	13.8	14.9	13.2	14.0	14.0	14.5	14.6	14.4
6:30:00 PM	13.7	15.0	13.2	14.0	14.0	14.5	14.6	14.4
6:31:00 PM	13.7	15.0	13.2	14.0	14.0	14.5	14.6	14.4
6:32:00 PM	13.7	14.8	13.1	13.9	14.0	14.5	14.5	14.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:33:00 PM	13.6	14.9	13.0	13.8	14.0	14.5	14.6	14.4
6:34:00 PM	13.5	14.7	12.8	13.7	14.0	14.5	14.6	14.4
6:35:00 PM	13.4	14.7	12.8	13.6	14.0	14.5	14.5	14.3
6:36:00 PM	13.5	14.9	12.9	13.8	14.0	14.4	14.5	14.3
6:37:00 PM	13.6	15.0	13.0	13.9	14.0	14.4	14.5	14.3
6:38:00 PM	13.5	15.0	13.0	13.8	14.0	14.4	14.5	14.3
6:39:00 PM	13.5	14.9	12.9	13.8	14.0	14.4	14.5	14.3
6:40:00 PM	13.4	14.9	12.9	13.7	14.0	14.4	14.5	14.3
6:41:00 PM	13.4	14.8	12.8	13.7	14.0	14.4	14.5	14.3
6:42:00 PM	13.2	14.7	12.6	13.5	14.0	14.4	14.5	14.3
6:43:00 PM	13.1	14.6	12.5	13.4	14.0	14.4	14.5	14.3
6:44:00 PM	13.1	14.4	12.5	13.3	13.0	14.3	14.4	13.9
6:45:00 PM	13.1	14.4	12.4	13.3	14.0	14.3	14.4	14.2
6:46:00 PM	13.0	14.2	12.4	13.2	14.0	14.3	14.4	14.2
6:47:00 PM	12.9	14.1	12.3	13.1	14.0	14.3	14.3	14.2
6:48:00 PM	12.9	14.1	12.3	13.1	14.0	14.3	14.4	14.2
6:49:00 PM	12.9	14.1	12.3	13.1	14.0	14.3	14.3	14.2
6:50:00 PM	13.0	14.2	12.4	13.2	14.0	14.2	14.3	14.2
6:51:00 PM	13.1	14.3	12.4	13.3	14.0	14.2	14.3	14.2
6:52:00 PM	12.9	14.2	12.4	13.2	13.0	14.2	14.3	13.8
6:53:00 PM	13.0	14.1	12.3	13.1	14.0	14.2	14.3	14.2
6:54:00 PM	12.8	14.2	12.3	13.1	13.0	14.2	14.1	13.8
6:55:00 PM	12.8	14.2	12.3	13.1	13.0	14.1	14.2	13.8
6:56:00 PM	13.1	14.2	12.4	13.2	13.0	14.1	14.2	13.8
6:57:00 PM	13.0	14.3	12.3	13.2	13.0	14.1	14.2	13.8
6:58:00 PM	13.0	14.3	12.2	13.2	13.0	14.1	14.2	13.8

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
6:59:00 PM	13.0	14.3	12.3	13.2	14.0	14.2	14.3	14.2
7:00:00 PM	13.0	14.4	12.3	13.2	13.0	14.2	14.3	13.8
7:00:00 PM	12.9	14.3	12.2	13.1	14.0	14.2	14.2	14.1
7:01:00 PM	12.8	14.3	12.2	13.1	13.0	14.1	14.2	13.8
7:02:00 PM	12.9	14.5	12.3	13.2	13.0	14.2	14.2	13.8
7:03:00 PM	12.9	14.3	12.3	13.2	14.0	14.1	14.2	14.1
7:04:00 PM	12.8	14.3	12.3	13.1	14.0	14.1	14.2	14.1
7:05:00 PM	12.8	14.3	12.3	13.1	13.0	14.1	14.2	13.8
7:06:00 PM	12.8	14.3	12.2	13.1	13.0	14.1	14.2	13.8
7:07:00 PM	12.6	14.2	12.2	13.0	13.0	14.1	14.2	13.8
7:08:00 PM	12.7	14.2	12.2	13.0	14.0	14.1	14.1	14.1
7:09:00 PM	12.8	14.2	12.2	13.1	13.0	14.1	14.2	13.8
7:10:00 PM	12.7	14.2	12.2	13.0	13.0	14.0	14.1	13.7
7:11:00 PM	12.8	14.2	12.2	13.1	13.0	14.0	14.1	13.7
7:12:00 PM	12.6	14.2	12.2	13.0	13.0	14.1	14.0	13.7
7:13:00 PM	12.8	14.1	12.1	13.0	13.0	14.0	14.0	13.7
7:14:00 PM	12.6	14.1	12.1	12.9	13.0	14.0	14.0	13.7
7:15:00 PM	12.6	14.1	12.2	13.0	13.0	14.0	14.0	13.7
7:16:00 PM	13.0	14.3	12.3	13.2	13.0	14.1	14.0	13.7
7:17:00 PM	12.8	14.3	12.3	13.1	13.0	13.9	13.9	13.6
7:18:00 PM	12.8	14.4	12.3	13.2	13.0	14.1	13.9	13.7
7:19:00 PM	12.9	14.3	12.4	13.2	13.0	13.9	14.0	13.6
7:20:00 PM	13.0	14.3	12.4	13.2	13.0	14.0	13.9	13.6
7:21:00 PM	12.9	14.3	12.4	13.2	13.0	14.0	13.9	13.6
7:22:00 PM	12.9	14.2	12.3	13.1	13.0	13.8	13.9	13.6
7:23:00 PM	13.0	14.3	12.3	13.2	13.0	13.8	13.9	13.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:24:00 PM	12.8	14.2	12.2	13.1	13.0	14.0	13.9	13.6
7:25:00 PM	12.7	14.1	12.1	13.0	13.0	13.8	13.9	13.6
7:26:00 PM	12.7	14.1	12.0	12.9	13.0	14.0	13.9	13.6
7:27:00 PM	12.6	14.2	12.1	13.0	13.0	14.0	13.9	13.6
7:28:00 PM	12.6	14.1	12.1	12.9	13.0	13.9	13.9	13.6
7:29:00 PM	12.8	14.2	12.2	13.1	13.0	13.9	13.9	13.6
7:30:00 PM	12.8	14.3	12.3	13.1	13.0	14.0	13.9	13.6
7:31:00 PM	12.9	14.3	12.4	13.2	13.0	13.8	13.9	13.6
7:32:00 PM	12.9	14.3	12.3	13.2	13.0	13.9	13.9	13.6
7:33:00 PM	12.9	14.3	12.3	13.2	13.0	13.8	13.9	13.6
7:34:00 PM	13.0	14.3	12.3	13.2	13.0	14.0	14.0	13.7
7:35:00 PM	13.0	14.5	12.5	13.3	13.0	13.9	14.0	13.6
7:36:00 PM	12.8	14.3	12.4	13.2	13.0	14.1	14.0	13.7
7:37:00 PM	12.8	14.3	12.3	13.1	13.0	13.8	14.0	13.6
7:38:00 PM	12.9	14.3	12.4	13.2	13.0	14.0	14.0	13.7
7:39:00 PM	13.0	14.4	12.4	13.3	13.0	13.9	14.0	13.6
7:40:00 PM	12.9	14.4	12.4	13.2	13.0	13.9	14.0	13.6
7:41:00 PM	13.0	14.3	12.4	13.2	13.0	14.0	14.0	13.7
7:42:00 PM	13.0	14.4	12.4	13.3	13.0	14.0	14.0	13.7
7:43:00 PM	12.8	14.3	12.3	13.1	13.0	13.9	14.0	13.6
7:44:00 PM	12.8	14.3	12.3	13.1	13.0	13.8	14.0	13.6
7:45:00 PM	12.8	14.4	12.3	13.2	13.0	14.0	13.9	13.6
7:46:00 PM	12.7	14.2	12.2	13.0	13.0	14.0	14.0	13.7
7:47:00 PM	12.7	14.2	12.2	13.0	13.0	14.0	14.0	13.7
7:48:00 PM	12.9	14.2	12.2	13.1	13.0	13.9	14.0	13.6
7:49:00 PM	12.9	14.4	12.4	13.2	13.0	13.9	13.9	13.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
7:50:00 PM	12.8	14.3	12.3	13.1	13.0	13.7	13.9	13.5
7:51:00 PM	12.9	14.3	12.4	13.2	13.0	13.7	13.8	13.5
7:52:00 PM	13.0	14.4	12.4	13.3	13.0	13.7	13.8	13.5
7:53:00 PM	12.8	14.3	12.3	13.1	13.0	13.7	13.9	13.5
7:54:00 PM	12.9	14.3	12.4	13.2	13.0	13.7	13.8	13.5
7:55:00 PM	12.8	14.3	12.3	13.1	13.0	13.8	13.8	13.5
7:56:00 PM	13.0	14.3	12.3	13.2	13.0	13.9	13.9	13.6
7:57:00 PM	13.0	14.3	12.3	13.2	13.0	13.9	13.9	13.6
7:58:00 PM	12.9	14.3	12.4	13.2	13.0	13.7	13.8	13.5
7:59:00 PM	13.0	14.5	12.4	13.3	13.0	13.8	13.7	13.5
8:00:00 PM	13.2	14.5	12.5	13.4	13.0	13.8	13.8	13.5
8:01:00 PM	13.1	14.5	12.5	13.4	13.0	13.8	13.8	13.5
8:02:00 PM	13.1	14.5	12.6	13.4	13.0	13.7	13.8	13.5
8:03:00 PM	13.1	14.5	12.6	13.4	13.0	13.6	13.8	13.5
8:04:00 PM	13.1	14.5	12.6	13.4	13.0	13.7	13.8	13.5
8:05:00 PM	13.1	14.5	12.5	13.4	13.0	13.7	13.8	13.5
8:06:00 PM	13.1	14.6	12.6	13.4	13.0	13.8	13.8	13.5
8:07:00 PM	13.1	14.5	12.6	13.4	13.0	13.8	13.8	13.5
8:08:00 PM	13.2	14.5	12.5	13.4	13.0	13.8	13.8	13.5
8:09:00 PM	13.1	14.6	12.6	13.4	13.0	13.8	13.8	13.5
8:10:00 PM	13.0	14.5	12.5	13.3	13.0	13.8	13.8	13.5
8:11:00 PM	13.3	14.6	12.6	13.5	13.0	13.9	13.9	13.6
8:12:00 PM	13.1	14.6	12.6	13.4	13.0	13.7	13.9	13.5
8:13:00 PM	13.4	14.7	12.7	13.6	13.0	13.9	13.9	13.6
8:14:00 PM	13.3	14.7	12.8	13.6	13.0	13.9	13.9	13.6
8:15:00 PM	13.3	14.7	12.8	13.6	13.0	13.9	13.9	13.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:16:00 PM	13.3	14.8	12.8	13.6	13.0	13.8	13.9	13.6
8:17:00 PM	13.5	14.8	12.8	13.7	13.0	13.8	14.0	13.6
8:18:00 PM	13.4	14.8	12.8	13.7	13.0	13.9	14.0	13.6
8:19:00 PM	13.3	14.7	12.8	13.6	13.0	13.8	13.9	13.6
8:20:00 PM	13.4	14.7	12.9	13.7	13.0	13.8	13.9	13.6
8:21:00 PM	13.3	14.7	12.8	13.6	13.0	13.8	14.0	13.6
8:22:00 PM	13.3	14.7	12.8	13.6	13.0	13.9	14.0	13.6
8:23:00 PM	12.7	14.3	12.6	13.2	13.0	13.9	14.0	13.6
8:24:00 PM	12.3	13.8	12.1	12.7	13.0	13.8	14.0	13.6
8:25:00 PM	12.4	13.7	12.0	12.7	13.0	13.8	13.9	13.6
8:26:00 PM	12.3	13.7	12.0	12.7	13.0	13.8	13.9	13.6
8:27:00 PM	12.4	13.9	12.1	12.8	13.0	13.8	13.9	13.6
8:28:00 PM	12.2	13.8	12.0	12.7	13.0	13.9	13.9	13.6
8:29:00 PM	12.4	13.7	12.0	12.7	13.0	14.0	13.9	13.6
8:30:00 PM	12.2	13.6	11.8	12.5	13.0	13.9	13.9	13.6
8:31:00 PM	12.1	13.5	11.7	12.4	13.0	13.9	13.9	13.6
8:32:00 PM	12.2	13.7	11.8	12.6	13.0	13.9	13.9	13.6
8:33:00 PM	12.2	13.6	11.8	12.5	13.0	13.7	13.9	13.5
8:34:00 PM	12.2	13.5	11.7	12.5	13.0	13.7	13.8	13.5
8:35:00 PM	12.4	13.7	11.8	12.6	13.0	13.8	13.8	13.5
8:36:00 PM	12.2	13.5	11.6	12.4	13.0	13.6	13.7	13.4
8:37:00 PM	12.4	13.5	11.6	12.5	13.0	13.8	13.7	13.5
8:38:00 PM	12.2	13.5	11.6	12.4	13.0	13.6	13.7	13.4
8:39:00 PM	12.2	13.5	11.6	12.4	13.0	13.7	13.8	13.5
8:40:00 PM	11.9	13.4	11.5	12.3	13.0	13.7	13.7	13.5
8:41:00 PM	12.0	13.4	11.5	12.3	13.0	13.6	13.7	13.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
8:42:00 PM	12.1	13.5	11.6	12.4	13.0	13.7	13.8	13.5
8:43:00 PM	12.0	13.4	11.6	12.3	13.0	13.7	13.8	13.5
8:44:00 PM	12.1	13.5	11.6	12.4	13.0	13.8	13.8	13.5
8:45:00 PM	12.0	13.4	11.5	12.3	13.0	13.7	13.8	13.5
8:46:00 PM	12.0	13.5	11.6	12.4	13.0	13.8	13.8	13.5
8:47:00 PM	12.0	13.4	11.7	12.4	13.0	13.6	13.7	13.4
8:48:00 PM	12.2	13.5	11.7	12.5	13.0	13.7	13.6	13.4
8:49:00 PM	12.1	13.5	11.7	12.4	13.0	13.5	13.6	13.4
8:50:00 PM	12.3	13.7	11.8	12.6	13.0	13.7	13.6	13.4
8:51:00 PM	12.3	13.7	11.9	12.6	13.0	13.7	13.6	13.4
8:52:00 PM	12.2	13.6	11.8	12.5	13.0	13.7	13.6	13.4
8:53:00 PM	12.4	13.7	12.0	12.7	13.0	13.6	13.6	13.4
8:54:00 PM	12.4	13.7	11.9	12.7	13.0	13.7	13.6	13.4
8:55:00 PM	12.3	13.8	11.9	12.7	13.0	13.7	13.7	13.5
8:56:00 PM	12.4	13.8	12.0	12.7	13.0	13.7	13.7	13.5
8:57:00 PM	12.5	13.8	12.1	12.8	13.0	13.7	13.7	13.5
8:58:00 PM	12.0	13.5	11.6	12.4	13.0	13.7	13.6	13.4
8:59:00 PM	11.9	13.3	11.4	12.2	13.0	13.7	13.5	13.4
9:00:00 PM	11.9	13.3	11.4	12.2	13.0	13.5	13.5	13.3
9:01:00 PM	11.8	13.2	11.2	12.1	13.0	13.5	13.6	13.4
9:02:00 PM	11.9	13.2	11.3	12.1	13.0	13.7	13.6	13.4
9:03:00 PM	11.8	13.2	11.2	12.1	13.0	13.5	13.5	13.3
9:04:00 PM	11.8	13.1	11.1	12.0	13.0	13.5	13.6	13.4
9:05:00 PM	11.7	13.1	11.1	12.0	13.0	13.5	13.7	13.4
9:06:00 PM	12.1	13.3	11.4	12.3	13.0	13.7	13.7	13.5
9:07:00 PM	11.8	13.1	11.2	12.0	13.0	13.7	13.6	13.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:08:00 PM	11.7	13.1	11.1	12.0	13.0	13.6	13.6	13.4
9:09:00 PM	11.9	13.2	11.3	12.1	13.0	13.4	13.5	13.3
9:10:00 PM	11.8	13.1	11.2	12.0	13.0	13.5	13.5	13.3
9:11:00 PM	11.6	13.0	11.1	11.9	13.0	13.5	13.4	13.3
9:12:00 PM	11.8	13.1	11.1	12.0	13.0	13.4	13.4	13.3
9:13:00 PM	11.9	13.1	11.2	12.1	13.0	13.4	13.4	13.3
9:14:00 PM	11.9	13.0	11.3	12.1	13.0	13.3	13.3	13.2
9:15:00 PM	11.9	13.1	11.4	12.1	13.0	13.1	13.2	13.1
9:16:00 PM	12.3	13.5	11.8	12.5	13.0	13.2	13.2	13.1
9:17:00 PM	12.4	13.4	11.7	12.5	13.0	13.3	13.3	13.2
9:18:00 PM	12.4	13.5	11.8	12.6	13.0	13.3	13.3	13.2
9:19:00 PM	12.4	13.5	11.9	12.6	13.0	13.4	13.4	13.3
9:20:00 PM	12.4	13.5	11.8	12.6	13.0	13.4	13.4	13.3
9:21:00 PM	12.2	13.4	11.7	12.4	13.0	13.3	13.4	13.2
9:22:00 PM	12.6	13.7	12.0	12.8	13.0	13.2	13.4	13.2
9:23:00 PM	12.4	13.5	11.9	12.6	13.0	13.3	13.5	13.3
9:24:00 PM	12.4	13.4	11.7	12.5	13.0	13.3	13.4	13.2
9:25:00 PM	11.9	13.2	11.5	12.2	13.0	13.4	13.4	13.3
9:26:00 PM	12.6	13.7	12.2	12.8	13.0	13.3	13.3	13.2
9:27:00 PM	12.5	13.7	12.0	12.7	13.0	13.2	13.4	13.2
9:28:00 PM	12.2	13.4	11.7	12.4	13.0	13.4	13.4	13.3
9:29:00 PM	12.2	13.4	11.8	12.5	13.0	13.4	13.4	13.3
9:30:00 PM	12.1	13.3	11.6	12.3	13.0	13.4	13.4	13.3
9:31:00 PM	12.0	13.1	11.4	12.2	13.0	13.3	13.3	13.2
9:32:00 PM	12.2	13.2	11.5	12.3	13.0	13.2	13.3	13.2
9:33:00 PM	12.0	13.1	11.3	12.1	13.0	13.2	13.3	13.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
9:34:00 PM	12.0	13.1	11.3	12.1	13.0	13.3	13.2	13.2
9:35:00 PM	12.0	13.1	11.4	12.2	13.0	13.2	13.1	13.1
9:36:00 PM	12.4	13.4	11.7	12.5	13.0	13.1	13.1	13.1
9:37:00 PM	12.2	13.3	11.7	12.4	13.0	13.1	13.1	13.1
9:38:00 PM	12.6	13.6	12.0	12.7	13.0	13.2	13.2	13.1
9:39:00 PM	12.6	13.6	12.0	12.7	13.0	13.2	13.2	13.1
9:40:00 PM	12.9	13.9	12.4	13.1	13.0	13.3	13.3	13.2
9:41:00 PM	13.2	14.1	12.5	13.3	13.0	13.4	13.4	13.3
9:42:00 PM	13.1	14.1	12.5	13.2	13.0	13.5	13.6	13.4
9:43:00 PM	12.8	13.9	12.2	13.0	13.0	13.6	13.7	13.4
9:44:00 PM	12.9	13.9	12.3	13.0	13.0	13.6	13.6	13.4
9:45:00 PM	12.6	13.8	12.1	12.8	13.0	13.6	13.6	13.4
9:46:00 PM	12.9	14.0	12.4	13.1	13.0	13.6	13.6	13.4
9:47:00 PM	13.0	14.1	12.5	13.2	13.0	13.5	13.6	13.4
9:48:00 PM	13.0	14.0	12.4	13.1	13.0	13.6	13.6	13.4
9:49:00 PM	12.8	13.9	12.3	13.0	13.0	13.6	13.6	13.4
9:50:00 PM	13.0	14.0	12.4	13.1	13.0	13.6	13.6	13.4
9:51:00 PM	13.0	14.0	12.4	13.1	13.0	13.4	13.6	13.3
9:52:00 PM	12.8	13.9	12.3	13.0	13.0	13.6	13.6	13.4
9:53:00 PM	12.7	13.8	12.2	12.9	13.0	13.6	13.6	13.4
9:54:00 PM	12.6	13.7	12.1	12.8	13.0	13.4	13.5	13.3
9:55:00 PM	12.2	13.5	11.8	12.5	13.0	13.6	13.5	13.4
9:56:00 PM	11.8	13.1	11.3	12.1	13.0	13.3	13.5	13.3
9:57:00 PM	11.9	13.1	11.3	12.1	13.0	13.2	13.3	13.2
9:58:00 PM	12.0	13.2	11.4	12.2	13.0	13.1	13.2	13.1
9:59:00 PM	12.1	13.3	11.6	12.3	13.0	13.3	13.2	13.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:00:00 PM	11.9	13.0	11.3	12.1	13.0	13.2	13.2	13.1
10:01:00 PM	11.9	13.1	11.3	12.1	13.0	13.2	13.2	13.1
10:02:00 PM	12.0	13.2	11.5	12.2	13.0	13.2	13.1	13.1
10:03:00 PM	11.5	12.8	11.0	11.8	13.0	13.1	13.1	13.1
10:04:00 PM	11.6	12.8	11.1	11.8	12.0	13.1	13.0	12.7
10:05:00 PM	11.9	13.0	11.3	12.1	12.0	13.0	12.9	12.6
10:06:00 PM	11.8	12.8	11.1	11.9	12.0	13.0	12.9	12.6
10:07:00 PM	11.6	12.7	11.0	11.8	12.0	13.0	12.9	12.6
10:08:00 PM	11.6	12.7	11.0	11.8	12.0	13.0	12.9	12.6
10:09:00 PM	11.7	12.9	11.1	11.9	12.0	13.0	12.9	12.6
10:10:00 PM	11.5	12.7	10.9	11.7	13.0	13.1	13.0	13.0
10:11:00 PM	11.4	12.6	10.8	11.6	12.0	13.0	13.0	12.7
10:12:00 PM	11.5	12.6	10.8	11.6	12.0	12.9	12.9	12.6
10:13:00 PM	11.6	12.5	10.8	11.6	13.0	12.9	12.8	12.9
10:14:00 PM	11.4	12.5	10.7	11.5	12.0	12.9	12.9	12.6
10:15:00 PM	11.5	12.5	10.7	11.6	12.0	12.8	12.8	12.5
10:16:00 PM	11.5	12.5	10.8	11.6	12.0	12.8	12.8	12.5
10:17:00 PM	11.4	12.6	10.7	11.6	12.0	12.8	12.9	12.6
10:18:00 PM	11.2	12.5	10.6	11.4	12.0	12.8	12.8	12.5
10:19:00 PM	11.4	12.4	10.6	11.5	12.0	12.9	12.8	12.6
10:20:00 PM	11.3	12.4	10.6	11.4	12.0	13.0	12.8	12.6
10:21:00 PM	11.3	12.4	10.6	11.4	13.0	13.0	12.9	13.0
10:22:00 PM	11.0	12.3	10.4	11.2	12.0	12.8	12.6	12.5
10:23:00 PM	11.2	12.3	10.5	11.3	12.0	12.6	12.6	12.4
10:24:00 PM	11.3	12.5	10.6	11.5	12.0	12.5	12.6	12.4
10:25:00 PM	11.4	12.7	10.8	11.6	12.0	12.6	12.6	12.4

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:26:00 PM	11.1	12.4	10.5	11.3	12.0	12.6	12.7	12.4
10:27:00 PM	11.3	12.5	10.5	11.4	12.0	12.7	12.8	12.5
10:28:00 PM	11.3	12.6	10.7	11.5	12.0	12.7	12.8	12.5
10:29:00 PM	11.4	12.5	10.7	11.5	12.0	12.8	12.9	12.6
10:30:00 PM	11.6	12.7	10.9	11.7	13.0	12.8	12.9	12.9
10:31:00 PM	11.5	12.7	10.9	11.7	12.0	12.8	13.0	12.6
10:32:00 PM	11.7	12.8	11.1	11.9	13.0	12.8	12.9	12.9
10:33:00 PM	11.6	12.8	11.0	11.8	13.0	12.8	13.0	12.9
10:34:00 PM	11.6	12.8	11.0	11.8	12.0	12.8	13.0	12.6
10:35:00 PM	11.5	12.6	10.9	11.7	13.0	12.8	12.9	12.9
10:36:00 PM	11.9	13.0	11.2	12.0	12.0	12.7	12.9	12.5
10:37:00 PM	12.0	13.2	11.4	12.2	12.0	12.7	12.9	12.5
10:38:00 PM	11.9	13.0	11.4	12.1	12.0	12.8	12.9	12.6
10:39:00 PM	11.7	12.8	11.2	11.9	12.0	12.8	12.9	12.6
10:40:00 PM	11.6	12.9	11.2	11.9	12.0	12.7	12.8	12.5
10:41:00 PM	11.4	12.6	10.9	11.6	12.0	12.7	12.8	12.5
10:42:00 PM	11.4	12.6	10.8	11.6	12.0	12.7	12.8	12.5
10:43:00 PM	11.4	12.4	10.6	11.5	12.0	12.7	12.7	12.5
10:44:00 PM	11.2	12.3	10.5	11.3	12.0	12.6	12.7	12.4
10:45:00 PM	11.4	12.6	10.7	11.6	12.0	12.6	12.7	12.4
10:46:00 PM	11.3	12.4	10.6	11.4	12.0	12.6	12.6	12.4
10:47:00 PM	11.2	12.5	10.6	11.4	12.0	12.6	12.6	12.4
10:48:00 PM	11.4	12.5	10.7	11.5	12.0	12.6	12.7	12.4
10:49:00 PM	11.4	12.6	10.7	11.6	12.0	12.7	12.8	12.5
10:50:00 PM	11.5	12.5	10.8	11.6	12.0	12.7	12.8	12.5
10:51:00 PM	11.5	12.6	10.7	11.6	12.0	12.7	12.8	12.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
10:52:00 PM	11.4	12.4	10.7	11.5	12.0	12.4	12.6	12.3
10:53:00 PM	11.3	12.4	10.7	11.5	12.0	12.5	12.6	12.4
10:54:00 PM	10.8	12.1	10.3	11.1	12.0	12.5	12.6	12.4
10:55:00 PM	11.3	12.3	10.5	11.4	12.0	12.6	12.6	12.4
10:56:00 PM	11.2	12.3	10.5	11.3	12.0	12.7	12.7	12.5
10:57:00 PM	11.0	12.3	10.5	11.3	12.0	12.7	12.8	12.5
10:58:00 PM	11.0	12.2	10.4	11.2	12.0	12.6	12.7	12.4
10:59:00 PM	11.0	12.3	10.5	11.3	12.0	12.6	12.7	12.4
11:00:00 PM	10.9	12.1	10.3	11.1	12.0	12.6	12.7	12.4
11:01:00 PM	10.9	12.1	10.4	11.1	12.0	12.6	12.6	12.4
11:02:00 PM	11.2	12.2	10.5	11.3	12.0	12.6	12.7	12.4
11:03:00 PM	11.2	12.3	10.5	11.3	12.0	12.6	12.7	12.4
11:04:00 PM	10.9	12.2	10.5	11.2	12.0	12.3	12.4	12.2
11:05:00 PM	11.2	12.3	10.5	11.3	12.0	12.2	12.3	12.2
11:06:00 PM	10.9	12.2	10.4	11.2	12.0	12.1	12.2	12.1
11:07:00 PM	10.9	12.1	10.4	11.1	12.0	12.2	12.2	12.1
11:08:00 PM	11.0	12.3	10.5	11.3	12.0	12.2	12.2	12.1
11:09:00 PM	11.2	12.2	10.5	11.3	12.0	12.2	12.3	12.2
11:10:00 PM	11.0	12.3	10.5	11.3	12.0	12.2	12.3	12.2
11:11:00 PM	11.1	12.4	10.5	11.3	12.0	12.2	12.4	12.2
11:12:00 PM	11.1	12.4	10.5	11.3	12.0	12.4	12.5	12.3
11:13:00 PM	10.9	12.2	10.4	11.2	12.0	12.5	12.6	12.4
11:14:00 PM	10.9	12.2	10.4	11.2	12.0	12.5	12.6	12.4
11:15:00 PM	11.4	12.5	10.7	11.5	12.0	12.4	12.5	12.3
11:16:00 PM	11.4	12.5	10.8	11.6	12.0	12.5	12.6	12.4
11:17:00 PM	11.4	12.6	10.8	11.6	12.0	12.4	12.5	12.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:18:00 PM	11.3	12.6	10.8	11.6	12.0	12.4	12.5	12.3
11:19:00 PM	11.2	12.5	10.7	11.5	12.0	12.4	12.5	12.3
11:20:00 PM	11.3	12.4	10.7	11.5	12.0	12.5	12.6	12.4
11:21:00 PM	11.4	12.5	10.7	11.5	12.0	12.4	12.5	12.3
11:22:00 PM	11.2	12.4	10.6	11.4	12.0	12.4	12.5	12.3
11:23:00 PM	11.3	12.4	10.7	11.5	12.0	12.4	12.5	12.3
11:24:00 PM	11.3	12.5	10.8	11.5	12.0	12.5	12.5	12.3
11:25:00 PM	11.3	12.5	10.8	11.5	12.0	12.5	12.6	12.4
11:26:00 PM	11.3	12.5	10.8	11.5	12.0	12.4	12.6	12.3
11:27:00 PM	11.2	12.4	10.7	11.4	12.0	12.4	12.6	12.3
11:28:00 PM	11.2	12.4	10.7	11.4	12.0	12.5	12.6	12.4
11:29:00 PM	11.1	12.4	10.7	11.4	12.0	12.4	12.5	12.3
11:30:00 PM	11.4	12.4	10.7	11.5	12.0	12.4	12.5	12.3
11:31:00 PM	11.4	12.4	10.7	11.5	12.0	12.4	12.5	12.3
11:32:00 PM	11.1	12.3	10.7	11.4	12.0	12.4	12.5	12.3
11:33:00 PM	11.0	12.3	10.5	11.3	12.0	12.3	12.4	12.2
11:34:00 PM	11.4	12.6	10.8	11.6	12.0	12.2	12.3	12.2
11:35:00 PM	11.4	12.6	10.9	11.6	12.0	12.2	12.3	12.2
11:36:00 PM	11.4	12.6	10.8	11.6	12.0	12.2	12.3	12.2
11:37:00 PM	11.2	12.4	10.7	11.4	12.0	12.3	12.4	12.2
11:38:00 PM	11.4	12.4	10.7	11.5	12.0	12.3	12.4	12.2
11:39:00 PM	11.1	12.3	10.5	11.3	12.0	12.4	12.4	12.3
11:40:00 PM	11.4	12.5	10.8	11.6	12.0	12.3	12.4	12.2
11:41:00 PM	11.1	12.3	10.6	11.3	12.0	12.4	12.4	12.3
11:42:00 PM	11.0	12.2	10.5	11.2	12.0	12.4	12.5	12.3
11:43:00 PM	11.0	12.3	10.5	11.3	12.0	12.4	12.5	12.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
11:44:00 PM	10.8	12.0	10.2	11.0	12.0	12.3	12.3	12.2
11:45:00 PM	11.1	12.2	10.4	11.2	12.0	12.3	12.3	12.2
11:46:00 PM	11.0	12.2	10.4	11.2	12.0	12.4	12.4	12.3
11:47:00 PM	10.9	12.2	10.4	11.2	12.0	12.4	12.5	12.3
11:48:00 PM	11.0	12.2	10.3	11.2	12.0	12.5	12.6	12.4
11:49:00 PM	10.9	12.2	10.4	11.2	12.0	12.6	12.7	12.4
11:50:00 PM	11.1	12.3	10.4	11.3	12.0	12.6	12.7	12.4
11:51:00 PM	11.1	12.3	10.5	11.3	12.0	12.6	12.7	12.4
11:52:00 PM	11.1	12.3	10.5	11.3	12.0	12.6	12.6	12.4
11:53:00 PM	11.1	12.4	10.5	11.3	12.0	12.6	12.7	12.4
11:54:00 PM	11.0	12.3	10.5	11.3	12.0	12.6	12.6	12.4
11:55:00 PM	11.2	12.3	10.6	11.4	12.0	12.6	12.7	12.4
11:56:00 PM	11.2	12.2	10.5	11.3	12.0	12.6	12.6	12.4
11:57:00 PM	11.1	12.2	10.4	11.2	12.0	12.8	12.8	12.5
11:58:00 PM	11.3	12.4	10.6	11.4	12.0	12.8	12.8	12.5
11:59:00 PM	11.2	12.4	10.6	11.4	12.0	12.8	12.9	12.6
12:00:00 AM	11.2	12.3	10.5	11.3	12.0	12.7	12.8	12.5
12:01:00 AM	11.2	12.3	10.5	11.3	12.0	12.7	12.8	12.5
12:02:00 AM	11.2	12.4	10.5	11.4	12.0	12.6	12.8	12.5
12:03:00 AM	11.0	12.4	10.5	11.3	12.0	12.7	12.7	12.5
12:04:00 AM	11.0	12.2	10.5	11.2	12.0	12.7	12.8	12.5
12:05:00 AM	11.2	12.4	10.5	11.4	12.0	12.7	12.8	12.5
12:06:00 AM	11.4	12.5	10.7	11.5	12.0	12.6	12.7	12.4
12:07:00 AM	11.3	12.6	10.7	11.5	12.0	12.7	12.7	12.5
12:08:00 AM	11.5	12.6	10.8	11.6	12.0	12.7	12.8	12.5
12:09:00 AM	11.6	12.6	10.8	11.7	12.0	12.7	12.8	12.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:10:00 AM	11.4	12.6	10.8	11.6	12.0	12.6	12.6	12.4
12:11:00 AM	11.5	12.6	10.8	11.6	12.0	12.6	12.8	12.5
12:12:00 AM	11.4	12.6	10.8	11.6	12.0	12.6	12.7	12.4
12:13:00 AM	11.3	12.5	10.7	11.5	12.0	12.7	12.8	12.5
12:14:00 AM	11.3	12.4	10.7	11.5	12.0	12.7	12.8	12.5
12:15:00 AM	11.3	12.6	10.8	11.6	12.0	12.7	12.8	12.5
12:16:00 AM	11.2	12.3	10.6	11.4	13.0	12.7	12.8	12.8
12:17:00 AM	11.2	12.5	10.7	11.5	12.0	12.6	12.7	12.4
12:18:00 AM	11.3	12.5	10.7	11.5	12.0	12.7	12.8	12.5
12:19:00 AM	11.1	12.4	10.6	11.4	12.0	12.7	12.8	12.5
12:20:00 AM	11.5	12.6	10.8	11.6	12.0	12.7	12.8	12.5
12:21:00 AM	11.6	12.7	10.9	11.7	12.0	12.8	12.8	12.5
12:22:00 AM	11.5	12.6	10.8	11.6	12.0	12.7	12.8	12.5
12:23:00 AM	11.4	12.4	10.7	11.5	12.0	12.6	12.8	12.5
12:24:00 AM	11.4	12.6	10.7	11.6	12.0	12.6	12.6	12.4
12:25:00 AM	11.2	12.3	10.5	11.3	12.0	12.6	12.7	12.4
12:26:00 AM	11.1	12.3	10.6	11.3	12.0	12.6	12.6	12.4
12:27:00 AM	11.2	12.3	10.5	11.3	12.0	12.6	12.6	12.4
12:28:00 AM	11.1	12.2	10.5	11.3	12.0	12.4	12.5	12.3
12:29:00 AM	11.1	12.3	10.4	11.3	12.0	12.4	12.5	12.3
12:30:00 AM	11.1	12.3	10.4	11.3	12.0	12.4	12.5	12.3
12:31:00 AM	11.1	12.2	10.5	11.3	12.0	12.5	12.5	12.3
12:32:00 AM	11.3	12.4	10.7	11.5	12.0	12.4	12.5	12.3
12:33:00 AM	11.1	12.4	10.6	11.4	12.0	12.5	12.6	12.4
12:34:00 AM	11.2	12.5	10.6	11.4	12.0	12.5	12.5	12.3
12:35:00 AM	11.1	12.4	10.5	11.3	12.0	12.4	12.5	12.3

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
12:36:00 AM	11.4	12.6	10.8	11.6	12.0	12.4	12.5	12.3
12:37:00 AM	11.3	12.4	10.7	11.5	12.0	12.4	12.5	12.3
12:38:00 AM	11.4	12.6	10.8	11.6	12.0	12.4	12.5	12.3
12:39:00 AM	11.4	12.6	10.9	11.6	12.0	12.4	12.5	12.3
12:40:00 AM	11.4	12.5	10.8	11.6	12.0	12.4	12.5	12.3
12:41:00 AM	11.4	12.6	10.7	11.6	12.0	12.4	12.4	12.3
12:42:00 AM	11.2	12.6	10.7	11.5	12.0	12.4	12.5	12.3
12:43:00 AM	11.4	12.5	10.8	11.6	12.0	12.3	12.4	12.2
12:44:00 AM	11.1	12.4	10.6	11.4	12.0	12.4	12.4	12.3
12:45:00 AM	11.4	12.6	10.7	11.6	12.0	12.4	12.4	12.3
12:46:00 AM	11.2	12.5	10.7	11.5	12.0	12.4	12.5	12.3
12:47:00 AM	11.1	12.3	10.6	11.3	12.0	12.3	12.4	12.2
12:48:00 AM	11.4	12.6	10.8	11.6	12.0	12.3	12.3	12.2
12:49:00 AM	11.0	12.2	10.4	11.2	12.0	12.3	12.3	12.2
12:50:00 AM	11.2	12.5	10.7	11.5	12.0	12.2	12.3	12.2
12:51:00 AM	11.1	12.3	10.5	11.3	12.0	12.3	12.3	12.2
12:52:00 AM	11.0	12.1	10.3	11.1	12.0	12.3	12.4	12.2
12:53:00 AM	11.0	12.2	10.3	11.2	12.0	12.3	12.4	12.2
12:54:00 AM	11.2	12.3	10.5	11.3	12.0	12.3	12.4	12.2
12:55:00 AM	11.1	12.3	10.4	11.3	12.0	12.3	12.4	12.2
12:56:00 AM	11.1	12.3	10.4	11.3	12.0	12.2	12.3	12.2
12:57:00 AM	10.9	12.2	10.3	11.1	12.0	12.2	12.3	12.2
12:58:00 AM	11.0	12.2	10.4	11.2	12.0	12.2	12.2	12.1
12:59:00 AM	10.9	12.2	10.3	11.1	12.0	12.2	12.3	12.2
1:00:00 AM	10.9	12.1	10.3	11.1	12.0	12.3	12.4	12.2
1:01:00 AM	10.8	12.1	10.2	11.0	12.0	12.2	12.2	12.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:02:00 AM	11.0	12.2	10.3	11.2	12.0	12.2	12.3	12.2
1:03:00 AM	10.8	12.1	10.2	11.0	12.0	12.3	12.4	12.2
1:04:00 AM	10.7	11.9	10.1	10.9	12.0	12.1	12.2	12.1
1:05:00 AM	10.6	11.9	10.0	10.8	12.0	12.2	12.3	12.2
1:06:00 AM	10.6	11.8	10.0	10.8	12.0	12.3	12.4	12.2
1:07:00 AM	10.7	12.0	10.1	10.9	12.0	12.4	12.4	12.3
1:08:00 AM	10.8	12.0	10.2	11.0	12.0	12.3	12.4	12.2
1:09:00 AM	10.9	12.0	10.2	11.0	12.0	12.3	12.4	12.2
1:10:00 AM	10.7	12.0	10.2	11.0	12.0	12.3	12.4	12.2
1:11:00 AM	10.6	11.9	10.1	10.9	12.0	12.2	12.3	12.2
1:12:00 AM	10.5	11.8	9.9	10.7	12.0	12.0	12.0	12.0
1:13:00 AM	10.3	11.7	9.8	10.6	12.0	12.0	12.1	12.0
1:14:00 AM	10.3	11.7	9.8	10.6	12.0	12.1	12.2	12.1
1:15:00 AM	10.2	11.5	9.6	10.4	12.0	12.0	12.2	12.1
1:16:00 AM	10.3	11.6	9.6	10.5	12.0	11.9	12.0	12.0
1:17:00 AM	10.6	11.9	10.0	10.8	12.0	11.9	12.0	12.0
1:18:00 AM	10.6	11.8	9.8	10.7	12.0	11.8	11.9	11.9
1:19:00 AM	10.5	11.8	9.9	10.7	12.0	11.8	11.9	11.9
1:20:00 AM	10.3	11.6	9.6	10.5	11.0	11.9	11.9	11.6
1:21:00 AM	10.3	11.6	9.7	10.5	11.0	11.8	11.8	11.5
1:22:00 AM	10.1	11.5	9.6	10.4	11.0	11.7	11.8	11.5
1:23:00 AM	10.3	11.5	9.6	10.5	11.0	11.6	11.7	11.4
1:24:00 AM	10.3	11.6	9.6	10.5	11.0	11.7	11.7	11.5
1:25:00 AM	10.5	11.7	9.7	10.6	11.0	11.7	11.8	11.5
1:26:00 AM	10.5	11.8	9.9	10.7	11.0	12.0	11.9	11.6
1:27:00 AM	10.8	11.9	10.1	10.9	11.0	11.9	11.8	11.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:28:00 AM	10.9	12.1	10.2	11.1	11.0	11.9	11.8	11.6
1:29:00 AM	10.9	12.1	10.2	11.1	11.0	12.0	11.9	11.6
1:30:00 AM	10.7	11.9	10.0	10.9	11.0	11.9	11.9	11.6
1:31:00 AM	10.3	11.6	9.7	10.5	11.0	12.0	12.0	11.7
1:32:00 AM	10.2	11.6	9.6	10.5	11.0	11.9	11.9	11.6
1:33:00 AM	10.3	11.6	9.6	10.5	11.0	11.9	11.8	11.6
1:34:00 AM	10.3	11.6	9.6	10.5	11.0	11.5	11.6	11.4
1:35:00 AM	10.5	11.8	9.9	10.7	11.0	11.8	11.7	11.5
1:36:00 AM	11.0	12.1	10.2	11.1	11.0	11.9	11.9	11.6
1:37:00 AM	10.9	12.1	10.3	11.1	12.0	12.0	12.0	12.0
1:38:00 AM	10.7	12.0	10.1	10.9	12.0	12.0	12.0	12.0
1:39:00 AM	10.7	11.9	9.9	10.8	11.0	12.0	12.0	11.7
1:40:00 AM	10.4	11.6	9.6	10.5	12.0	12.0	12.0	12.0
1:41:00 AM	10.1	11.5	9.5	10.4	12.0	11.8	11.9	11.9
1:42:00 AM	10.1	11.4	9.4	10.3	11.0	12.0	11.9	11.6
1:43:00 AM	10.2	11.5	9.5	10.4	11.0	11.8	11.9	11.6
1:44:00 AM	10.1	11.4	9.4	10.3	11.0	11.7	11.8	11.5
1:45:00 AM	10.1	11.4	9.3	10.3	11.0	11.8	11.8	11.5
1:46:00 AM	10.4	11.6	9.6	10.5	11.0	11.8	11.8	11.5
1:47:00 AM	10.7	11.8	9.9	10.8	11.0	11.7	11.8	11.5
1:48:00 AM	10.3	11.5	9.6	10.5	12.0	11.8	11.9	11.9
1:49:00 AM	10.0	11.3	9.3	10.2	11.0	11.9	11.8	11.6
1:50:00 AM	10.0	11.2	9.2	10.1	12.0	11.9	11.9	11.9
1:51:00 AM	9.9	11.2	9.2	10.1	12.0	12.0	12.0	12.0
1:52:00 AM	10.1	11.4	9.4	10.3	12.0	11.9	11.9	11.9
1:53:00 AM	9.7	11.1	9.1	10.0	11.0	11.7	11.7	11.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
1:54:00 AM	9.7	11.2	9.2	10.0	11.0	11.5	11.5	11.3
1:55:00 AM	10.1	11.4	9.4	10.3	11.0	11.5	11.5	11.3
1:56:00 AM	10.4	11.6	9.7	10.6	11.0	11.5	11.5	11.3
1:57:00 AM	10.0	11.3	9.4	10.2	11.0	11.7	11.6	11.4
1:58:00 AM	9.9	11.3	9.4	10.2	11.0	11.6	11.5	11.4
1:59:00 AM	9.9	11.2	9.3	10.1	11.0	11.6	11.6	11.4
2:00:00 AM	9.8	11.2	9.2	10.1	11.0	11.7	11.8	11.5
2:01:00 AM	9.9	11.3	9.3	10.2	11.0	11.8	11.8	11.5
2:02:00 AM	10.1	11.2	9.3	10.2	11.0	11.9	12.0	11.6
2:03:00 AM	10.1	11.3	9.3	10.2	12.0	12.0	12.1	12.0
2:04:00 AM	9.9	11.2	9.3	10.1	12.0	12.0	12.2	12.1
2:05:00 AM	10.1	11.3	9.3	10.2	12.0	12.1	12.2	12.1
2:06:00 AM	10.1	11.4	9.5	10.3	12.0	12.1	12.2	12.1
2:07:00 AM	10.1	11.4	9.5	10.3	12.0	12.2	12.3	12.2
2:08:00 AM	10.3	11.6	9.6	10.5	12.0	12.2	12.3	12.2
2:09:00 AM	10.5	11.8	9.8	10.7	12.0	12.2	12.3	12.2
2:10:00 AM	10.3	11.7	9.8	10.6	12.0	12.2	12.2	12.1
2:11:00 AM	10.3	11.6	9.7	10.5	12.0	11.9	11.9	11.9
2:12:00 AM	10.2	11.6	9.7	10.5	11.0	11.8	11.7	11.5
2:13:00 AM	10.2	11.6	9.7	10.5	11.0	11.9	11.8	11.6
2:14:00 AM	10.2	11.6	9.6	10.5	11.0	11.8	11.8	11.5
2:15:00 AM	10.2	11.5	9.6	10.4	12.0	12.0	11.9	12.0
2:16:00 AM	10.2	11.6	9.6	10.5	11.0	12.1	11.9	11.7
2:17:00 AM	10.5	11.8	9.9	10.7	12.0	12.0	12.0	12.0
2:18:00 AM	10.5	11.8	9.9	10.7	11.0	12.0	11.8	11.6
2:19:00 AM	10.4	11.8	9.9	10.7	11.0	11.9	11.8	11.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:20:00 AM	10.5	11.8	9.9	10.7	12.0	12.0	11.9	12.0
2:21:00 AM	10.5	11.9	10.0	10.8	11.0	11.9	11.9	11.6
2:22:00 AM	10.8	12.2	10.4	11.1	12.0	11.9	11.9	11.9
2:23:00 AM	10.8	12.2	10.3	11.1	12.0	12.0	11.9	12.0
2:24:00 AM	10.7	12.0	10.3	11.0	11.0	11.9	11.9	11.6
2:25:00 AM	10.8	12.2	10.2	11.1	12.0	11.9	11.8	11.9
2:26:00 AM	10.6	12.0	10.2	10.9	12.0	11.9	11.9	11.9
2:27:00 AM	11.1	12.3	10.6	11.3	11.0	11.8	11.8	11.5
2:28:00 AM	10.5	11.8	10.0	10.8	11.0	11.8	11.7	11.5
2:29:00 AM	10.3	11.8	9.9	10.7	11.0	11.8	11.7	11.5
2:30:00 AM	10.7	11.9	10.1	10.9	11.0	11.8	11.7	11.5
2:31:00 AM	10.5	12.0	10.0	10.8	11.0	11.8	11.7	11.5
2:32:00 AM	10.6	11.9	10.1	10.9	11.0	11.8	11.7	11.5
2:33:00 AM	10.7	12.0	10.1	10.9	11.0	11.8	11.7	11.5
2:34:00 AM	10.8	12.0	10.2	11.0	11.0	11.8	11.7	11.5
2:35:00 AM	10.5	12.0	10.1	10.9	11.0	11.8	11.7	11.5
2:36:00 AM	10.5	12.0	10.0	10.8	11.0	11.8	11.7	11.5
2:37:00 AM	10.4	11.8	10.0	10.7	11.0	11.8	11.7	11.5
2:38:00 AM	10.5	11.9	9.9	10.8	11.0	11.8	11.7	11.5
2:39:00 AM	10.3	11.8	9.9	10.7	11.0	11.7	11.7	11.5
2:40:00 AM	10.5	11.9	10.0	10.8	11.0	11.7	11.6	11.4
2:41:00 AM	10.7	12.0	10.1	10.9	11.0	11.7	11.6	11.4
2:42:00 AM	10.5	12.0	10.1	10.9	11.0	11.8	11.7	11.5
2:43:00 AM	10.6	12.0	10.1	10.9	11.0	11.8	11.8	11.5
2:44:00 AM	10.7	12.0	10.1	10.9	11.0	11.8	11.8	11.5
2:45:00 AM	10.7	12.1	10.1	11.0	11.0	11.8	11.8	11.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
2:46:00 AM	10.5	12.0	10.1	10.9	11.0	11.8	11.8	11.5
2:47:00 AM	10.5	11.9	10.0	10.8	11.0	11.8	11.7	11.5
2:48:00 AM	10.6	12.0	10.0	10.9	11.0	11.9	11.8	11.6
2:49:00 AM	10.5	12.0	10.0	10.8	11.0	11.8	11.8	11.5
2:50:00 AM	10.5	11.9	10.0	10.8	11.0	11.8	11.8	11.5
2:51:00 AM	10.5	12.0	9.9	10.8	11.0	11.8	11.8	11.5
2:52:00 AM	10.5	12.0	9.9	10.8	11.0	11.8	11.8	11.5
2:53:00 AM	10.4	11.8	9.8	10.7	11.0	11.8	11.7	11.5
2:54:00 AM	10.3	11.8	9.8	10.6	11.0	11.8	11.7	11.5
2:55:00 AM	10.4	11.8	9.9	10.7	11.0	11.8	11.8	11.5
2:56:00 AM	10.4	11.9	9.8	10.7	12.0	12.0	11.9	12.0
2:57:00 AM	10.3	11.8	9.8	10.6	12.0	12.0	11.9	12.0
2:58:00 AM	10.4	11.8	9.9	10.7	12.0	12.1	12.0	12.0
2:59:00 AM	10.5	11.8	10.0	10.8	12.0	12.1	12.1	12.1
3:00:00 AM	10.3	11.8	9.8	10.6	12.0	12.1	12.0	12.0
3:01:00 AM	10.3	11.8	9.8	10.6	12.0	12.1	12.0	12.0
3:02:00 AM	10.4	11.8	9.8	10.7	12.0	12.1	12.0	12.0
3:03:00 AM	10.3	11.8	9.8	10.6	12.0	12.1	12.1	12.1
3:04:00 AM	10.4	11.8	9.9	10.7	12.0	12.1	12.0	12.0
3:05:00 AM	10.5	12.0	10.0	10.8	12.0	12.0	12.0	12.0
3:06:00 AM	10.7	12.1	10.1	11.0	11.0	11.8	11.8	11.5
3:07:00 AM	10.5	12.1	10.1	10.9	11.0	11.9	11.8	11.6
3:08:00 AM	10.7	12.1	10.1	11.0	11.0	12.0	11.8	11.6
3:09:00 AM	10.7	12.1	10.1	11.0	11.0	11.9	11.8	11.6
3:10:00 AM	10.7	12.1	10.1	11.0	11.0	11.9	11.8	11.6
3:11:00 AM	10.8	12.2	10.2	11.1	11.0	11.9	11.8	11.6

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:12:00 AM	10.6	12.2	10.2	11.0	11.0	11.9	11.8	11.6
3:13:00 AM	10.7	12.2	10.1	11.0	11.0	11.8	11.7	11.5
3:14:00 AM	10.6	12.1	10.2	11.0	11.0	11.8	11.7	11.5
3:15:00 AM	10.6	12.2	10.1	11.0	11.0	11.8	11.7	11.5
3:16:00 AM	10.7	12.1	10.2	11.0	11.0	11.8	11.8	11.5
3:17:00 AM	10.7	12.1	10.2	11.0	11.0	11.9	11.8	11.6
3:18:00 AM	10.7	12.2	10.2	11.0	11.0	11.9	11.9	11.6
3:19:00 AM	10.7	12.1	10.2	11.0	11.0	11.9	11.9	11.6
3:20:00 AM	10.7	12.1	10.2	11.0	11.0	12.0	11.9	11.6
3:21:00 AM	10.7	12.2	10.2	11.0	11.0	11.9	11.9	11.6
3:22:00 AM	10.7	12.2	10.2	11.0	11.0	12.0	11.9	11.6
3:23:00 AM	10.6	12.1	10.2	11.0	12.0	12.0	12.0	12.0
3:24:00 AM	10.6	12.2	10.1	11.0	12.0	12.1	12.1	12.1
3:25:00 AM	10.7	12.0	10.1	10.9	12.0	12.0	12.0	12.0
3:26:00 AM	10.6	12.2	10.1	11.0	12.0	12.0	12.1	12.0
3:27:00 AM	10.7	12.2	10.2	11.0	11.0	12.0	12.0	11.7
3:28:00 AM	10.7	12.1	10.2	11.0	12.0	12.0	12.0	12.0
3:29:00 AM	10.7	12.1	10.1	11.0	11.0	11.9	11.9	11.6
3:30:00 AM	10.5	12.0	10.0	10.8	12.0	12.0	11.9	12.0
3:31:00 AM	10.7	12.0	10.1	10.9	11.0	11.9	11.8	11.6
3:32:00 AM	10.6	12.1	10.1	10.9	11.0	11.9	11.8	11.6
3:33:00 AM	10.6	12.1	10.1	10.9	11.0	12.0	11.8	11.6
3:34:00 AM	10.7	12.1	10.2	11.0	12.0	12.0	11.9	12.0
3:35:00 AM	10.7	12.2	10.3	11.1	11.0	12.0	12.0	11.7
3:36:00 AM	10.6	12.1	10.1	10.9	11.0	11.9	11.8	11.6
3:37:00 AM	10.7	12.1	10.2	11.0	11.0	11.8	11.8	11.5

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
3:38:00 AM	10.7	12.0	10.1	10.9	11.0	11.8	11.7	11.5
3:39:00 AM	10.6	12.1	10.1	10.9	11.0	11.9	11.8	11.6
3:40:00 AM	10.5	12.1	10.1	10.9	11.0	11.8	11.8	11.5
3:41:00 AM	10.6	12.0	10.1	10.9	11.0	11.9	11.8	11.6
3:42:00 AM	10.6	12.1	10.1	10.9	11.0	11.9	11.8	11.6
3:43:00 AM	10.6	12.1	10.1	10.9	11.0	11.8	11.9	11.6
3:44:00 AM	10.6	12.1	10.1	10.9	11.0	12.1	12.0	11.7
3:45:00 AM	10.7	12.1	10.1	11.0	12.0	12.2	12.1	12.1
3:46:00 AM	10.7	12.1	10.1	11.0	12.0	12.2	12.2	12.1
3:47:00 AM	10.6	12.2	10.1	11.0	12.0	12.3	12.3	12.2
3:48:00 AM	10.7	12.2	10.2	11.0	12.0	12.3	12.3	12.2
3:49:00 AM	10.8	12.2	10.2	11.1	12.0	12.2	12.4	12.2
3:50:00 AM	10.8	12.2	10.3	11.1	12.0	12.2	12.4	12.2
3:51:00 AM	11.0	12.3	10.4	11.2	12.0	12.0	12.1	12.0
3:52:00 AM	11.1	12.4	10.5	11.3	12.0	12.0	12.0	12.0
3:53:00 AM	10.8	12.4	10.4	11.2	12.0	12.0	12.0	12.0
3:54:00 AM	10.8	12.3	10.4	11.2	11.0	11.9	11.9	11.6
3:55:00 AM	10.9	12.4	10.5	11.3	11.0	11.9	11.9	11.6
3:56:00 AM	10.8	12.4	10.4	11.2	11.0	11.9	11.9	11.6
3:57:00 AM	11.0	12.4	10.5	11.3	12.0	11.9	12.0	12.0
3:58:00 AM	11.0	12.4	10.4	11.3	11.0	11.9	12.0	11.6
3:59:00 AM	11.0	12.5	10.5	11.3	11.0	11.8	11.9	11.6
4:00:00 AM	11.2	12.6	10.6	11.5	11.0	11.8	11.9	11.6
4:01:00 AM	11.0	12.5	10.6	11.4	11.0	11.9	11.9	11.6
4:02:00 AM	10.9	12.4	10.5	11.3	12.0	12.0	11.9	12.0
4:03:00 AM	10.9	12.5	10.5	11.3	12.0	12.0	11.9	12.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:04:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	12.0	12.0
4:05:00 AM	10.9	12.5	10.5	11.3	12.0	12.0	12.0	12.0
4:06:00 AM	10.9	12.4	10.5	11.3	12.0	12.1	12.0	12.0
4:07:00 AM	10.9	12.4	10.5	11.3	12.0	12.0	11.9	12.0
4:08:00 AM	10.9	12.4	10.5	11.3	12.0	12.0	12.0	12.0
4:09:00 AM	10.9	12.4	10.5	11.3	11.0	12.0	12.0	11.7
4:10:00 AM	11.0	12.4	10.5	11.3	11.0	12.0	12.0	11.7
4:11:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	12.0	12.0
4:12:00 AM	10.9	12.4	10.5	11.3	12.0	11.9	12.0	12.0
4:13:00 AM	10.9	12.4	10.4	11.2	12.0	11.9	11.9	11.9
4:14:00 AM	10.9	12.3	10.4	11.2	12.0	11.9	11.9	11.9
4:15:00 AM	11.1	12.4	10.5	11.3	12.0	11.9	12.0	12.0
4:16:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	12.0	12.0
4:17:00 AM	10.9	12.4	10.5	11.3	12.0	11.9	12.0	12.0
4:18:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	12.0	12.0
4:19:00 AM	11.0	12.4	10.5	11.3	12.0	11.9	11.9	11.9
4:20:00 AM	10.9	12.4	10.5	11.3	11.0	11.9	11.9	11.6
4:21:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	11.9	11.9
4:22:00 AM	10.9	12.4	10.5	11.3	11.0	11.9	11.9	11.6
4:23:00 AM	11.0	12.4	10.5	11.3	11.0	11.9	12.0	11.6
4:24:00 AM	11.0	12.4	10.5	11.3	12.0	11.9	12.0	12.0
4:25:00 AM	10.9	12.5	10.5	11.3	12.0	11.9	12.0	12.0
4:26:00 AM	11.0	12.5	10.6	11.4	11.0	11.9	11.9	11.6
4:27:00 AM	11.1	12.5	10.6	11.4	11.0	12.0	11.9	11.6
4:28:00 AM	11.0	12.6	10.6	11.4	12.0	11.9	12.0	12.0
4:29:00 AM	11.0	12.6	10.6	11.4	12.0	12.0	12.0	12.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:30:00 AM	11.0	12.5	10.6	11.4	11.0	11.9	12.0	11.6
4:31:00 AM	11.0	12.6	10.6	11.4	12.0	11.9	12.0	12.0
4:32:00 AM	11.0	12.6	10.6	11.4	12.0	11.9	12.0	12.0
4:33:00 AM	11.1	12.6	10.6	11.4	12.0	11.9	12.0	12.0
4:34:00 AM	11.0	12.6	10.6	11.4	12.0	12.1	12.0	12.0
4:35:00 AM	11.1	12.6	10.6	11.4	11.0	12.0	12.0	11.7
4:36:00 AM	11.2	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:37:00 AM	11.2	12.7	10.7	11.5	12.0	11.9	12.0	12.0
4:38:00 AM	11.1	12.6	10.7	11.5	12.0	12.0	12.0	12.0
4:39:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:40:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:41:00 AM	11.1	12.6	10.7	11.5	12.0	12.0	12.0	12.0
4:42:00 AM	11.2	12.7	10.7	11.5	12.0	12.1	12.1	12.1
4:43:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.1	12.0
4:44:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.1	12.0
4:45:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.1	12.0
4:46:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:47:00 AM	11.0	12.6	10.6	11.4	12.0	12.0	12.1	12.0
4:48:00 AM	11.1	12.6	10.7	11.5	12.0	12.0	12.0	12.0
4:49:00 AM	11.1	12.6	10.7	11.5	12.0	12.0	12.0	12.0
4:50:00 AM	11.2	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:51:00 AM	11.2	12.7	10.7	11.5	12.0	12.0	12.0	12.0
4:52:00 AM	11.1	12.7	10.7	11.5	12.0	12.0	12.1	12.0
4:53:00 AM	11.3	12.8	10.9	11.7	12.0	12.0	12.0	12.0
4:54:00 AM	11.3	12.8	10.9	11.7	12.0	12.0	12.1	12.0
4:55:00 AM	11.3	12.8	10.9	11.7	12.0	12.0	12.1	12.0

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
4:56:00 AM	11.2	12.8	10.8	11.6	12.0	12.0	12.1	12.0
4:57:00 AM	11.2	12.8	10.8	11.6	12.0	12.0	12.1	12.0
4:58:00 AM	11.3	12.8	10.8	11.6	12.0	12.1	12.2	12.1
4:59:00 AM	11.3	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:00:00 AM	11.4	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:01:00 AM	11.4	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:02:00 AM	11.4	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:03:00 AM	11.3	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:04:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.2	12.1
5:05:00 AM	11.4	12.9	11.0	11.8	12.0	12.1	12.2	12.1
5:06:00 AM	11.4	13.0	11.0	11.8	12.0	12.1	12.2	12.1
5:07:00 AM	11.4	13.0	11.0	11.8	12.0	12.1	12.2	12.1
5:08:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.2	12.1
5:09:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.2	12.1
5:10:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.2	12.1
5:11:00 AM	11.4	12.9	11.0	11.8	12.0	12.1	12.2	12.1
5:12:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.2	12.1
5:13:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.2	12.1
5:14:00 AM	11.4	13.0	11.0	11.8	12.0	12.1	12.2	12.1
5:15:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.2	12.1
5:16:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.2	12.1
5:17:00 AM	11.4	12.9	10.9	11.7	12.0	12.2	12.2	12.1
5:18:00 AM	11.4	12.9	10.9	11.7	12.0	12.2	12.2	12.1
5:19:00 AM	11.5	13.0	10.9	11.8	12.0	12.2	12.3	12.2
5:20:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.3	12.2
5:21:00 AM	11.4	12.9	10.9	11.7	12.0	12.2	12.2	12.1

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:22:00 AM	11.3	12.9	10.8	11.7	12.0	12.2	12.2	12.1
5:23:00 AM	11.3	12.9	10.9	11.7	12.0	12.2	12.2	12.1
5:24:00 AM	11.3	12.9	10.9	11.7	12.0	12.2	12.2	12.1
5:25:00 AM	11.3	12.8	10.9	11.7	12.0	12.2	12.3	12.2
5:26:00 AM	11.3	12.8	10.8	11.6	12.0	12.2	12.2	12.1
5:27:00 AM	11.3	12.8	10.8	11.6	12.0	12.2	12.3	12.2
5:28:00 AM	11.4	12.9	10.9	11.7	12.0	12.2	12.2	12.1
5:29:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.2	12.1
5:30:00 AM	11.3	12.8	10.8	11.6	12.0	12.1	12.2	12.1
5:31:00 AM	11.2	12.8	10.8	11.6	12.0	12.1	12.2	12.1
5:32:00 AM	11.3	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:33:00 AM	11.4	13.0	11.0	11.8	12.0	12.1	12.2	12.1
5:34:00 AM	11.4	12.9	10.9	11.7	12.0	12.1	12.2	12.1
5:35:00 AM	11.4	13.0	11.0	11.8	12.0	12.1	12.2	12.1
5:36:00 AM	11.5	13.1	11.0	11.9	12.0	12.2	12.2	12.1
5:37:00 AM	11.4	13.0	10.9	11.8	12.0	12.2	12.3	12.2
5:38:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.2	12.1
5:39:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:40:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:41:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:42:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.3	12.2
5:43:00 AM	11.4	13.0	11.0	11.8	12.0	12.2	12.3	12.2
5:44:00 AM	11.5	13.0	11.1	11.9	12.0	12.2	12.3	12.2
5:45:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:46:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:47:00 AM	11.6	13.1	11.1	11.9	12.0	12.2	12.3	12.2

Continued on next page

Time (minute step)	$\mathbf{T}_{out1}$	$\mathbf{T}_{out2}$	$\mathbf{T}_{out3}$	$\mathbf{T}_{out(av)}$	$\mathbf{T}_{in1}$	$\mathbf{T}_{in2}$	$\mathbf{T}_{in3}$	$\mathbf{T}_{in(av)}$
5:48:00 AM	11.6	13.1	11.2	12.0	12.0	12.2	12.3	12.2
5:49:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:50:00 AM	11.6	13.2	11.2	12.0	12.0	12.2	12.3	12.2
5:51:00 AM	11.5	13.1	11.1	11.9	12.0	12.2	12.3	12.2
5:52:00 AM	11.7	13.3	11.3	12.1	12.0	12.2	12.3	12.2
5:53:00 AM	11.8	13.3	11.3	12.1	12.0	12.3	12.4	12.2
5:54:00 AM	11.7	13.3	11.3	12.1	12.0	12.3	12.4	12.2
5:55:00 AM	11.8	13.3	11.3	12.1	12.0	12.3	12.4	12.2
5:56:00 AM	11.8	13.3	11.3	12.1	12.0	12.3	12.4	12.2
5:57:00 AM	11.8	13.3	11.4	12.2	12.0	12.3	12.4	12.2
5:58:00 AM	11.8	13.4	11.4	12.2	12.0	12.3	12.4	12.2

Continued on next page

Appendix 4: Traditional adobe mud hut code, Botswana Version 1.0

University of Botswana Traditional adobe mud hut source code

Version 1.0 | May 2019

Authors | K. Letlhare-Wastikc O. S. Motsamai

Description: Predicts indoor temperature within an adobe mud hut

---