

လျှပ်စစ်ဆိုင်ရာလုပ်ငန်းအတွေ့အကြုံ

Experience

Creativity and Innovation

မြန်မာနိုင်ငံအင်ဂျင်နီယာအသင်းချုပ်

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Experience

# U Shwe

BE (Electrical Power)

1977 (November)

## Work Experience

- 1) **Electrical Base Workshop** Construction Corporation **3 Years**  
Electrical equipment repairing and testing (R&I Section)  
**Myaungmya Jute mill Project**

**Creation** Dry Type Welding Transformer

2) **Glass Factory Thanlyin** Ceramic Industry Corporation, Ministry (1 ) about 20 Years

Household Glass factory construction , installation, production, maintenance,

an, Bottole glass factory



**Creation** Different sizes and different kinds of Glass cup.

**3) Asia World Company Limited Still in service**

**23**

**Years**

**( i) Asia World Port Terminal Construction, Operation, Maintenance 5 Years**

**(Electrical, Harbour Mobile Cranes, Container Handling equipment)2001, May1 open**

**Container handling**



**(ii) Yangon International Airport, Terminal 2 Renovation & Extension Project, M&E Systems Installation, Operation, Maintenance (Electrical Systems, ELV Systems, Airport Specialist Systems)** **5 Years**  
**2007, May 25 open**



**(iii) Naypyitaw International Airport construction Project**  
**Installation, Operation, Maintenance (Electrical Systems, ELV**  
**Systems, Airport Specialist Systems, Airfield Lighting control**  
**system)**

**5 Years**

**2011, Dec 19 open**



**(iv) Yangon International Airport Development Project**  
Installation, (Electrical Systems, ELV Systems, Airport Specialist Systems, Airfield Lighting control system)

From 2014  
Up to Now

**Terminal 1 Construction**

2016, March 12 Open





**Asia World Company Limited Experiences Continues  
Main Projects**

**(v) Terminal 3 Construction**

**2016, Dec 5 Open**



**(vi) Terminal 2 Renovation & Extension**

**Target  
completion  
date 2023**



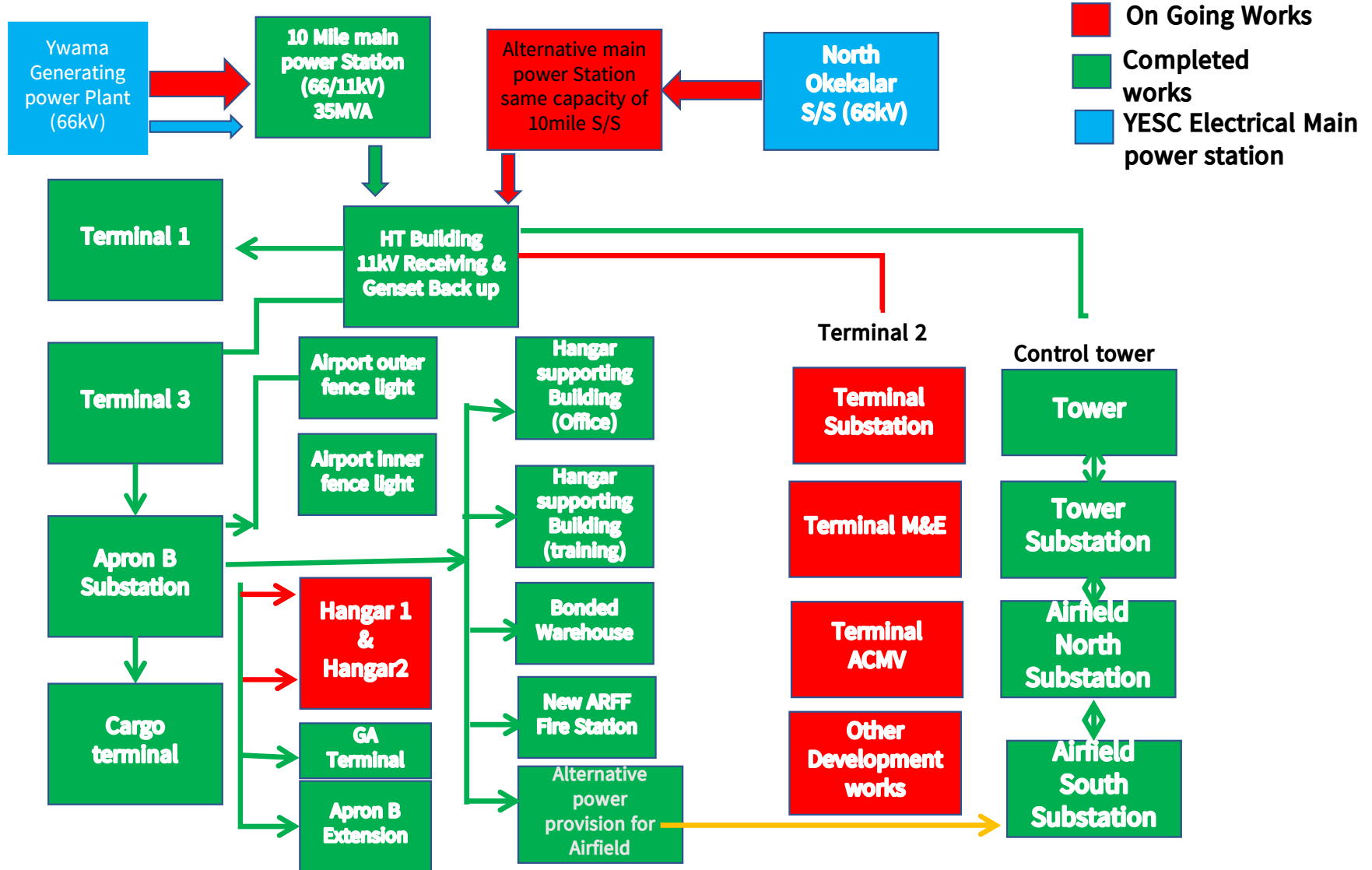
# Work Experience

# Total 44 years

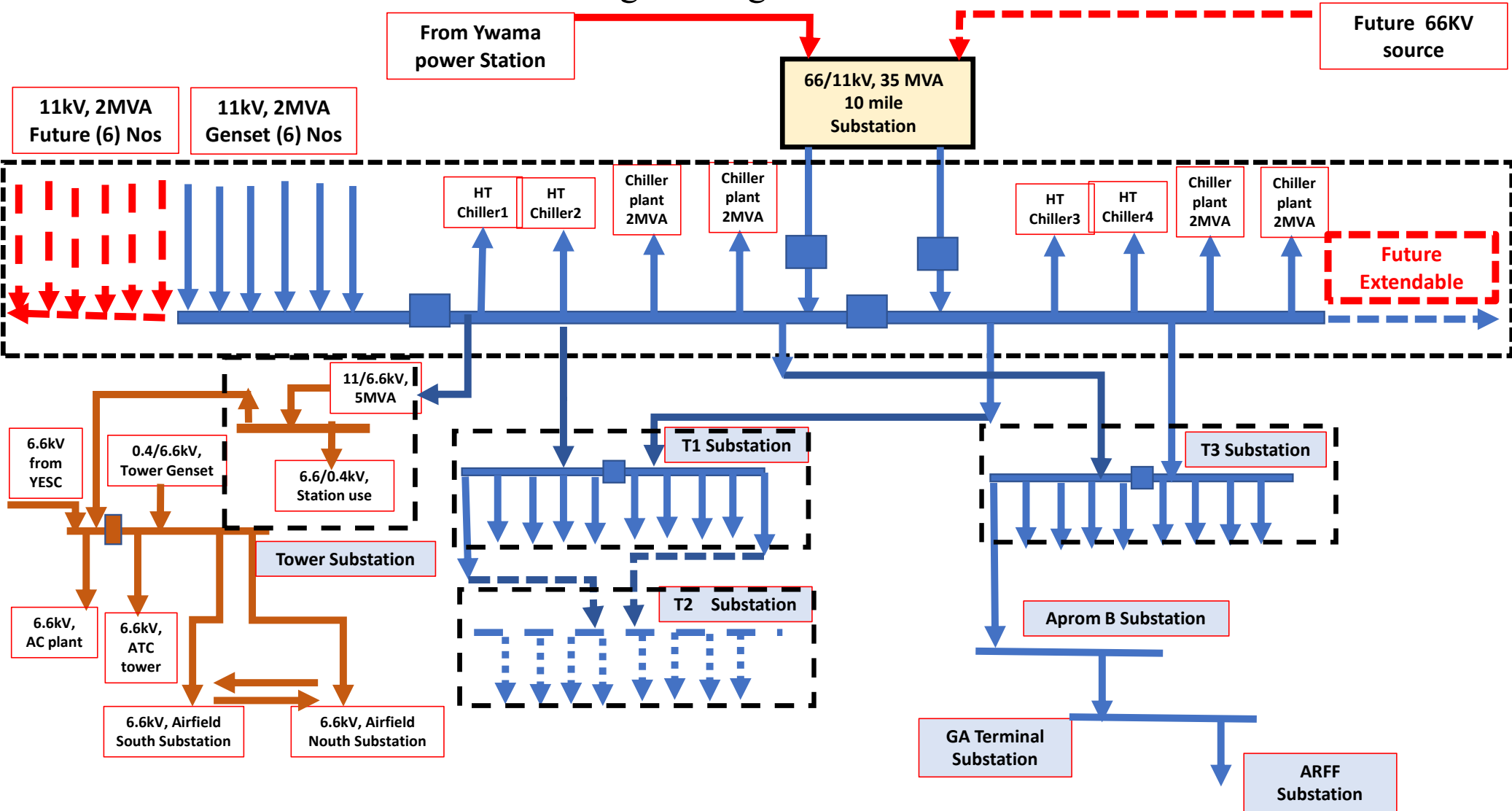
Construction Corporation (Electrical Base Workshop)	(1978-1981)
Myaung Mya Jute Mill Project )	(1980-1981)
Glass Factory (Thanlyin)	(1981-2000)
Ngwe Saung beach resort & Electric distribution Project	(2000-2001)
Thantithukha Building	(2000)
Ywa Thar Gyi Mental Hospital	(2001-2002),
Asia World Port Terminal Construction and Maintenance	(2000-2004)
Wartayar Timber mill & Residential Construction Project	(2002-2003),
Mitta Nyunt Housing Project	(2002-2004)
Military Office Buildings (1,2,3,7) NayPyiTaw Special Projects	(2003-2006)
<b>Yangon International Airport Extension Project</b>	<b>(2004-2007)</b>
Yeywar Hydropower Plant Crushing Plant	(2004-2005)
Koneyang Hydro power Plant Electrical System Renovation	(2005 - 2006)
Namtu Mining Renovation Project & Tilling Plant	(2005 - 2006)

Shwe Li HydroPower Plant (2005 - 2006) Crushing Plant	(2006 - 2007)
Myaung Ta Gar Fertilizer Plant Project	(2008-2010)
NayPyiTaw City Hall	(2009 – 2010)
Thaukyegat Hydropower Plant	( 20012-2013 )
Hledan Centre Project (Shopping Centre & Apartment Building)	(2010-2013)
<b>NayPyiTaw International Airport Project</b>	<b>(2009-2011)</b>
NayPyiTaw Horizon Lake View Resort Project	(2011-2014)
Shangri-La Residence Project	(2012-2013)
Paragon Residences Project	(2013) 000
<b>Yangon International Airport Development Project</b>	<b>(2014 to at present)</b>
<b>Tha pyay wa 30MW solar power Plant ( Supporting of supervision Engineer &amp; manpower)</b>	<b>(2021 to present)</b>
<b>Taungdawkwın 20MW solar power Plant ( Supporting of supervision Engineer &amp; manpower)</b>	<b>(2022 to present)</b>

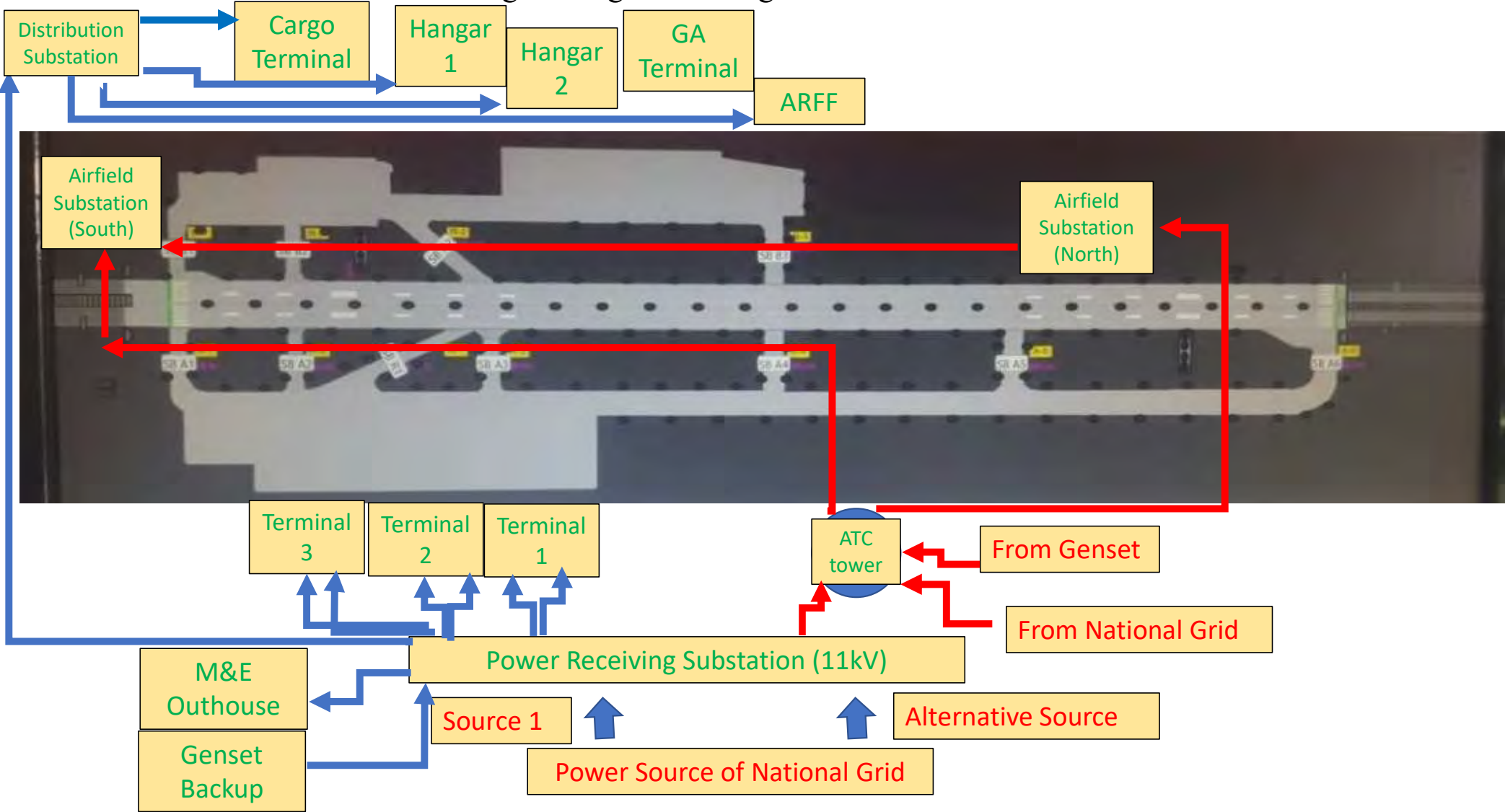
# Yangon International Airport 11KV power distribution Present & Future Plan



# YIAD High Voltage Distribution



# High Voltage Receiving and Distribution



# Installation of YIAD Project Main substation & Distribution System



66kV D/S & HGIS  
HUYU



66/11kV, 35MVA X'mer  
HUYU, China



11KV 2 In 2 Out + Tie  
Switchgear  
HUYU, China



12KV U/G cable, 2 Lines  
Universal



12kV Switchgears,(Type  
Test)  
Siemen, SIMOPRIME  
Hainam, Vietnam



Terminal 1

12kV Switchgears  
Siemen, SIMOPRIME  
Hainam, Vietnam



11/.4kV, 2MVA, Drytype  
X'mer, HUYU



400V MSB. Plisma, Type  
Test Schneider. SuperMega



11kV Output, 2MVA  
Gensets x 6 No, Mitsubishi



Terminal 3

12kV Switchgears  
Siemen, SIMOPRIME  
Hainam, Vietnam



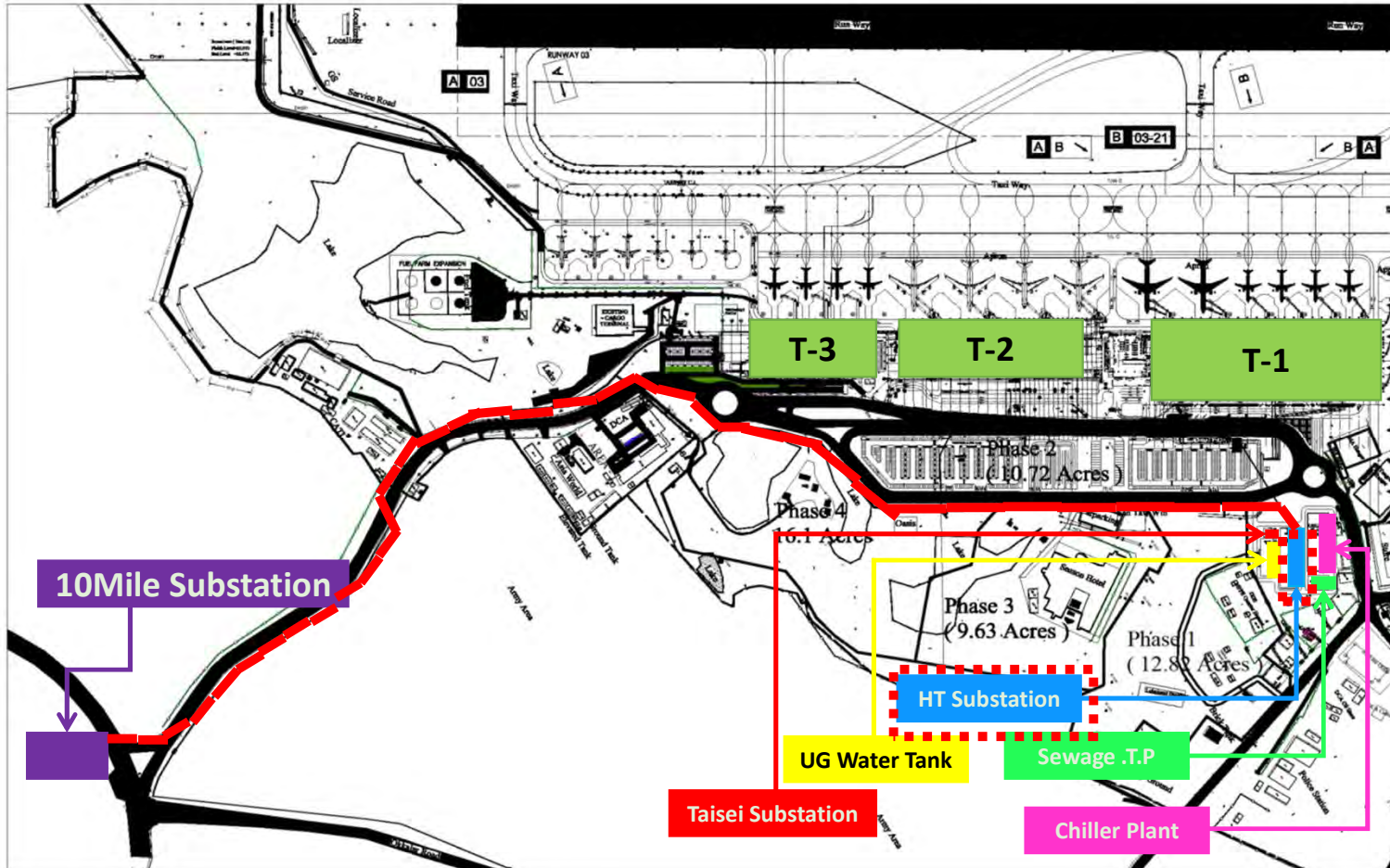
11/.4kV, 2MVA, Drytype  
X'mer, HUYU



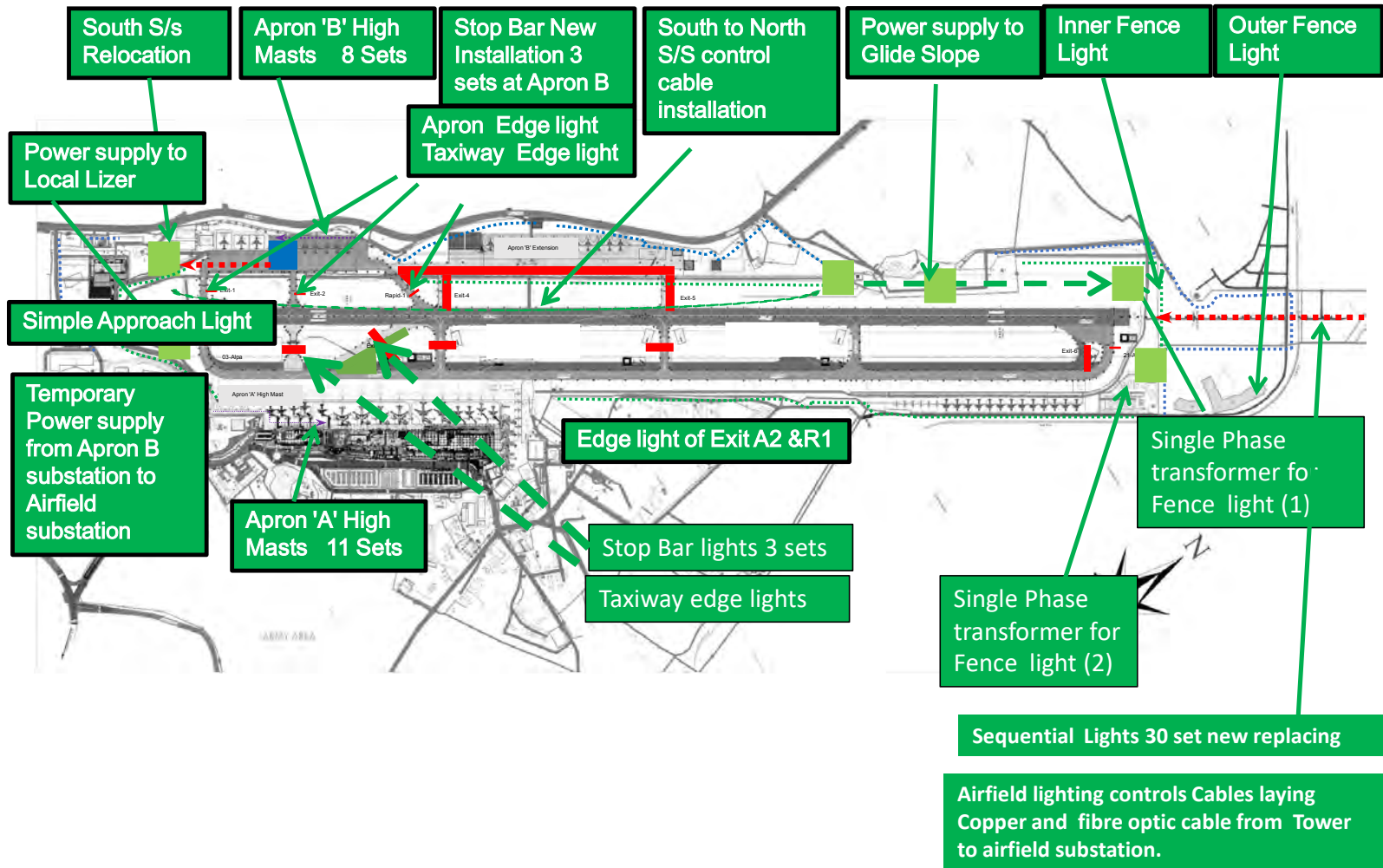
400V MSB. Blockset (Type  
Test) Schneider. Hainam



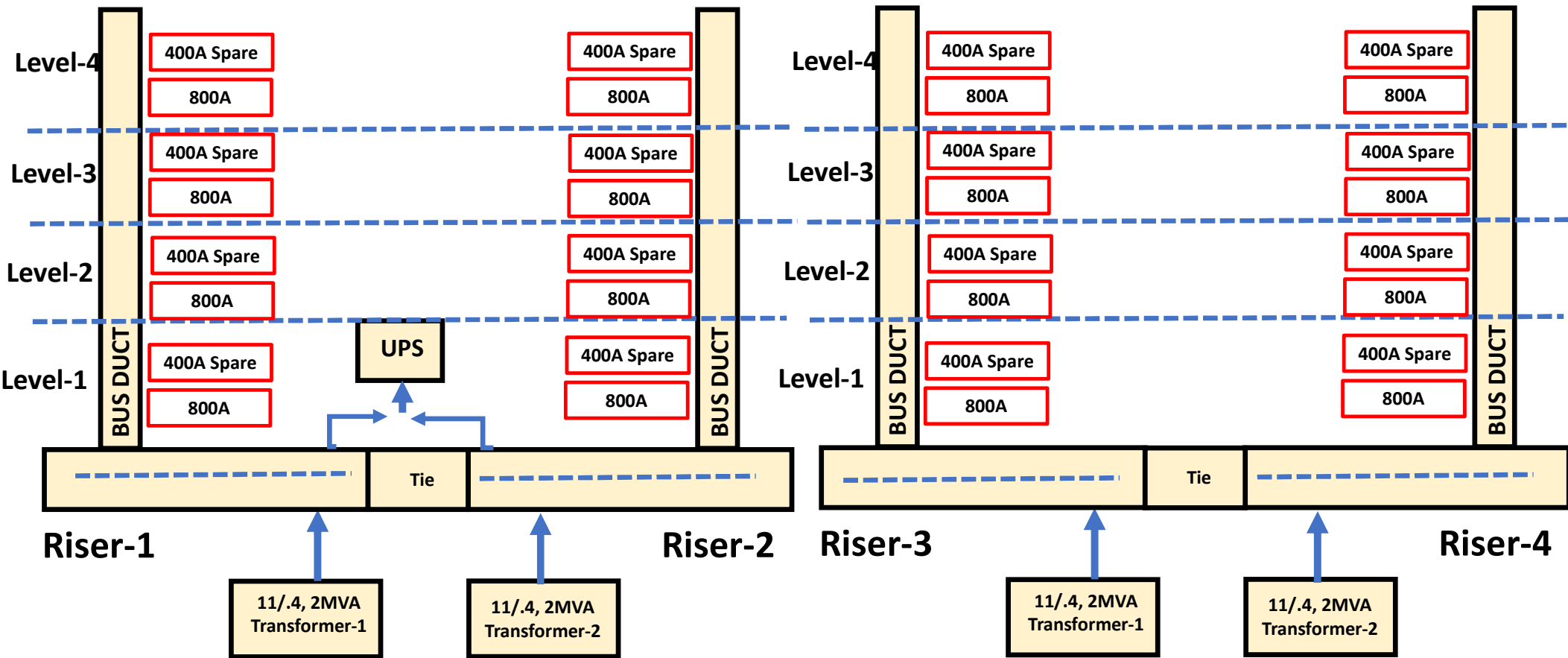
# Building Location Plan



## Upgrading of Airfield Lighting Systems



# Low Voltage Distribution



# Main points to consider Electricity for International Airport

- 1) Supply Electricity should have alternative sources.
- 2) Main Substation have at least 2 main transformers and capacity should be adequate double capacity.(Incase of one transformer fail remain transformer must be adequate for consuming loads.)
- 3) Incoming cable also 2 incoming. (one cable had fault , remain cable line can work full duty.)
- 4) All electrical distribution must be underground cable in airport compound.
- 5) Backup emergency power should be provided 100%
- 6) UPS power should be provided for all Airport system servers , lighting and power for Important area.

## What is Type Test Panel

This Photo received from Hainam Switchboard manufacturing Co., Ltd , Vietnam



This video received from Hainam Switchboard manufacturing Co., Ltd , Vietnam  
Arc Voltage and Short circuit test



# Creativity and Innovation



$$\text{IDEA} = P ( K + I )$$



$$\text{IDEA} = P ( K + I )$$

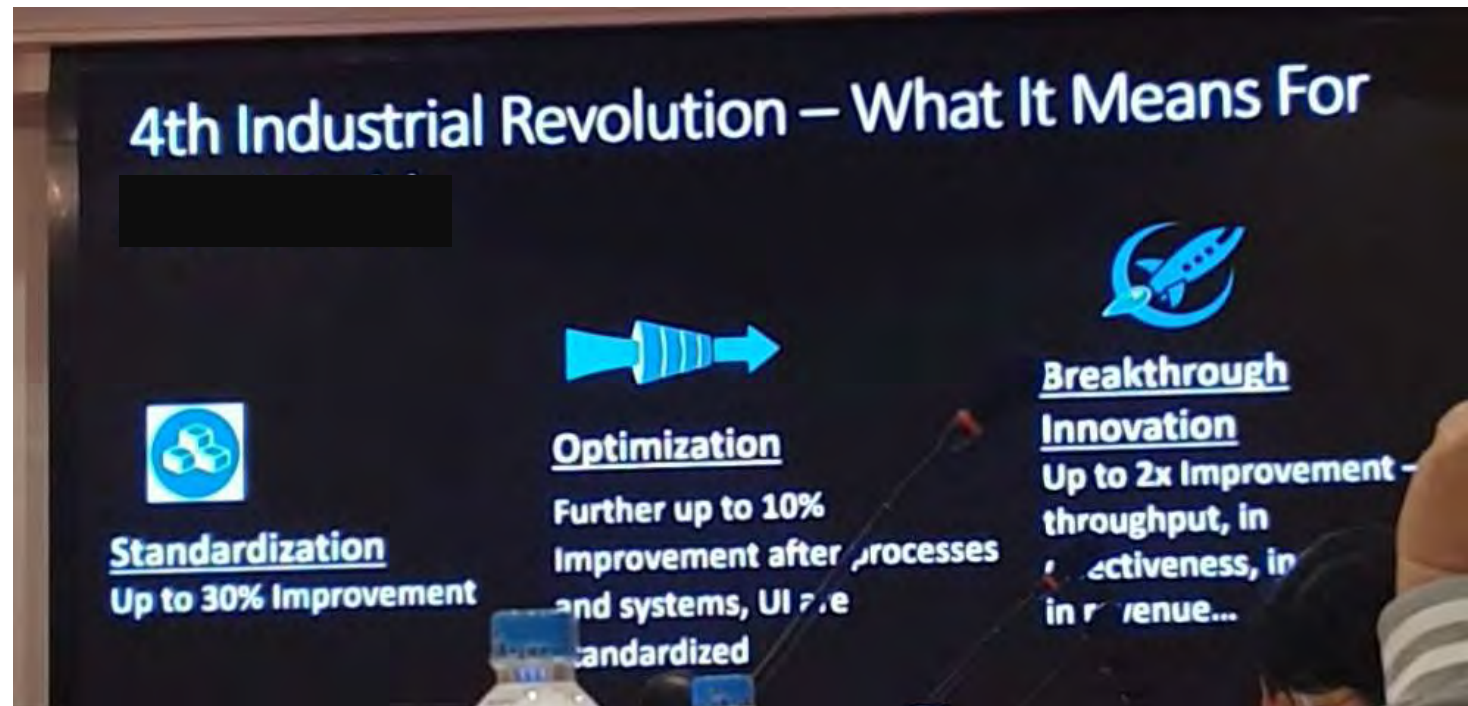
**P = Person**

**K = Knowledge**

**I = Information**

Another Speaker RAMCO also presented about :-

## IR 4.0



# What is IR (Industrial Revolution)

Myanmar also

Target to



**IR 4.0**

**1760 (18 Century)**

**IR 1.0**

**1870 (19 Century)**

**IR 2.0**

**1969 (20 Century)**

**IR 3.0**

**2011 (21 Century)**

**IR 4.0**

**1760 (18 Century)**

**IR 1.0**

**Power changed to Mechanization for production**

**Steam Power**



**Steam Engines**



**Steamship**



**Steam- powered Locomotive**

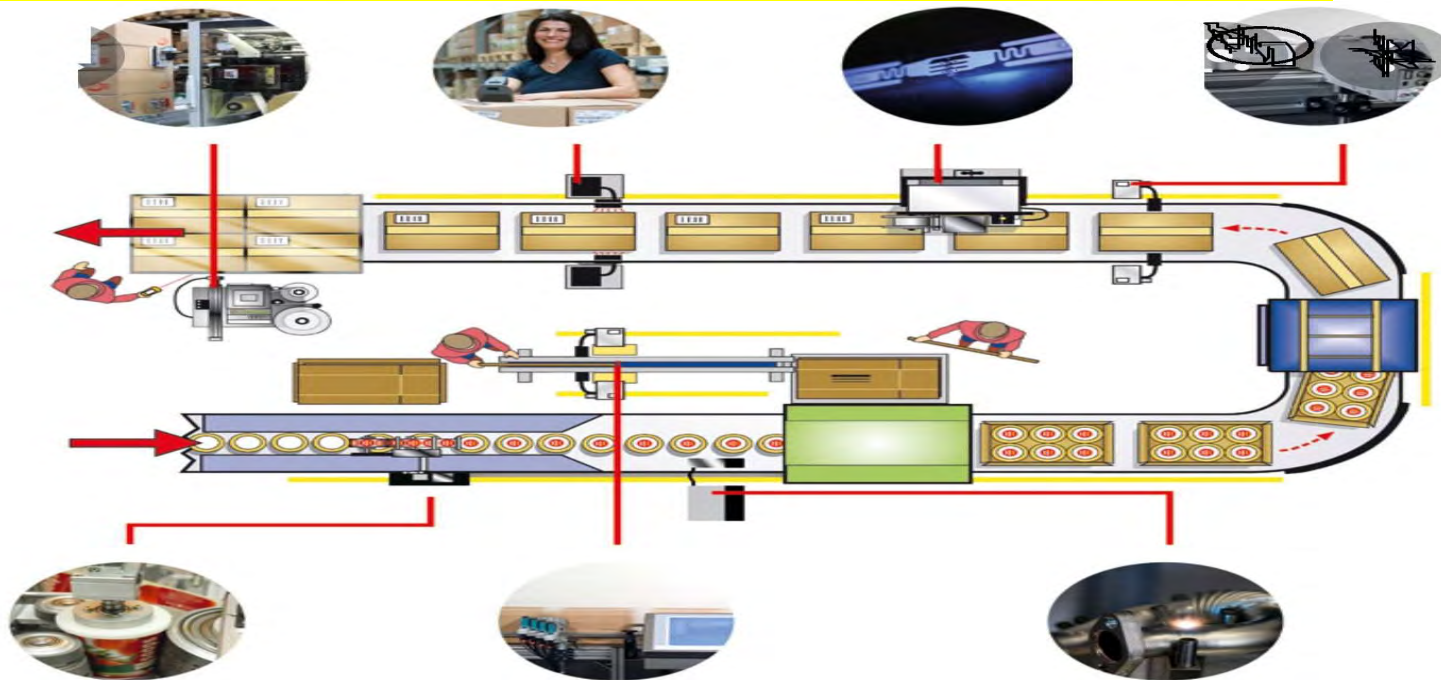


1870 (19 Century)

IR

20

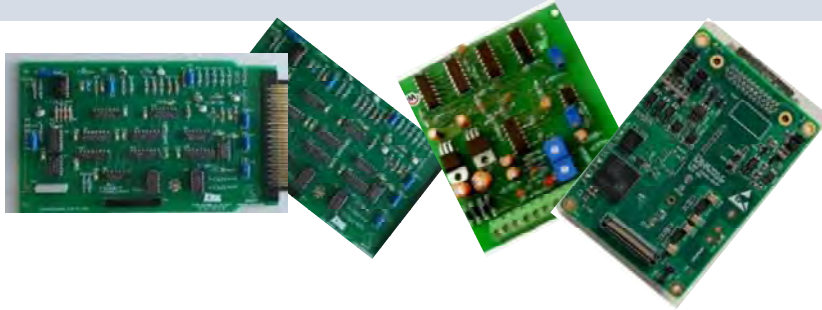
Discovery of electricity and assembly line production



Idea of mass production, faster and lower cost

**1969 (20 Century)**

**IR 3.0  
Electronics**



**Memory- Programmable Controls**



**Programmable Logic Controls**



**Automation in production process**



# 2011 (21 Century)

## IR 4.0

Information Technologies



Computer Technologies



Communication Technologies



Networking



Smart factories



Smart Homes, etc:-



# 2021 (21 Century)

## IR 5.0

What is Industry Revolution IR 5.0?

1) People working alongside robots and smart machines



2) Robots helping humans work better and faster by leveraging advanced technologies like the **Internet Of Things (IoT)** and big data.



3) Robots with advanced AI technologies. AI (Artificial Intelligence)

4) Self driving Car

**Sensors**  
Lasers, radars and  
Cameras detect  
objects in all directions.

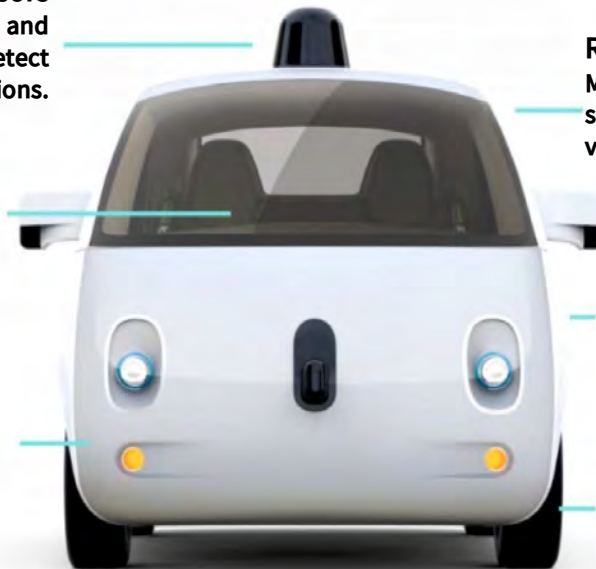
**Interior**  
Designed for  
Riding, not for  
driving

**Electric  
Batteries**  
To power the  
vehicle

**Round Shape**  
Maximizes  
sensor field of  
view

**Computer**  
Design specially  
for self driving

**Back-Up System**  
For steering, braking  
Computing and more





# Let study myself 1986 (During 3 months job training in Germany)

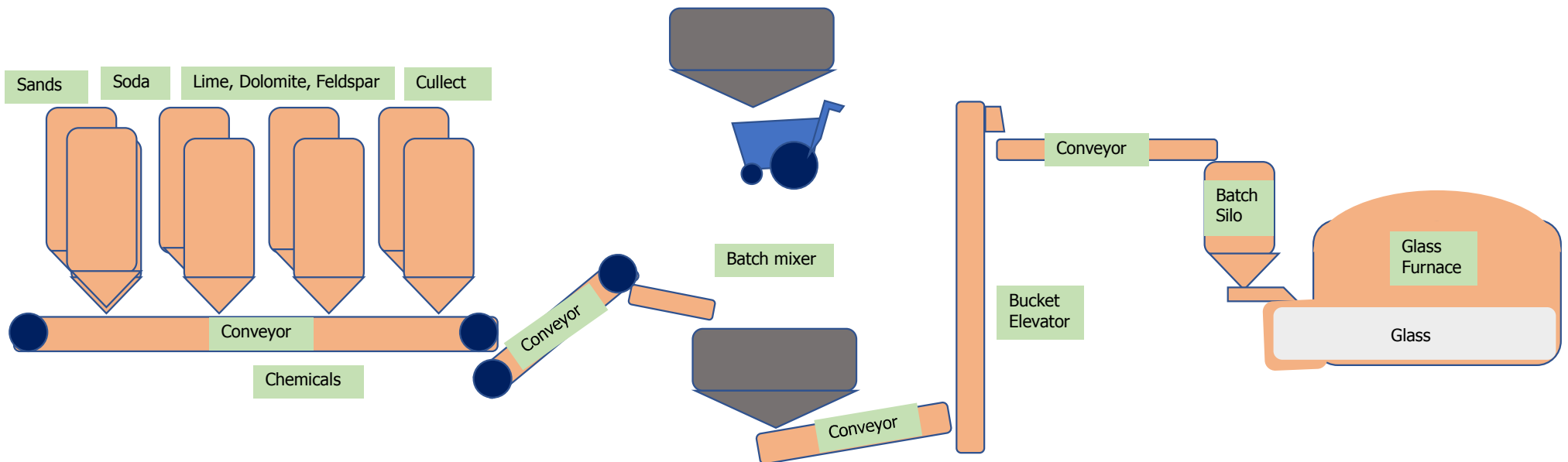
Batch mixing Plant

## Germany

Computerized batch mixing System

Can mix different kinds of glass batch at least 60 tons to 200 tons furnace 20 nos.

1 controller/ shift and 3 person/24 hrs



## Myanmar

Man power + mechanization

Can mix different kinds of glass batch 30 tons furnace 2 No

10persons/ shift and 30 person/24 hrs

## Quality Control of finished goods

### Germany

Automatic Inspection equipment

1 person of Inspector/ 4 production Lines/8 hrs

### Myanmar

Visual inspected by manpower

8 person of Inspectors/ 4 production Lines/8 hrs

## Driverless transporting system and Automatic Packing

1 no of Transporting machine is waiting for 4 production lines , that machine carry and send the pallet system product to automatic packaging machine.

Man power 1person/1 line

Man power

Man power 10 persons/1 line

We can use Computerized batch mixing in **1996** , operated with automatic, semiautomatic and manual.

But this system is out of automatic function after **2001** because less of proper maintenance and unskillful operation.

## **Lesson**

**Very important to operate and maintenance with Skill Operators and Engineer to run prolong life.  
After installed.**

$$\text{IDEA} = P ( K + I )$$

**Review on myself**

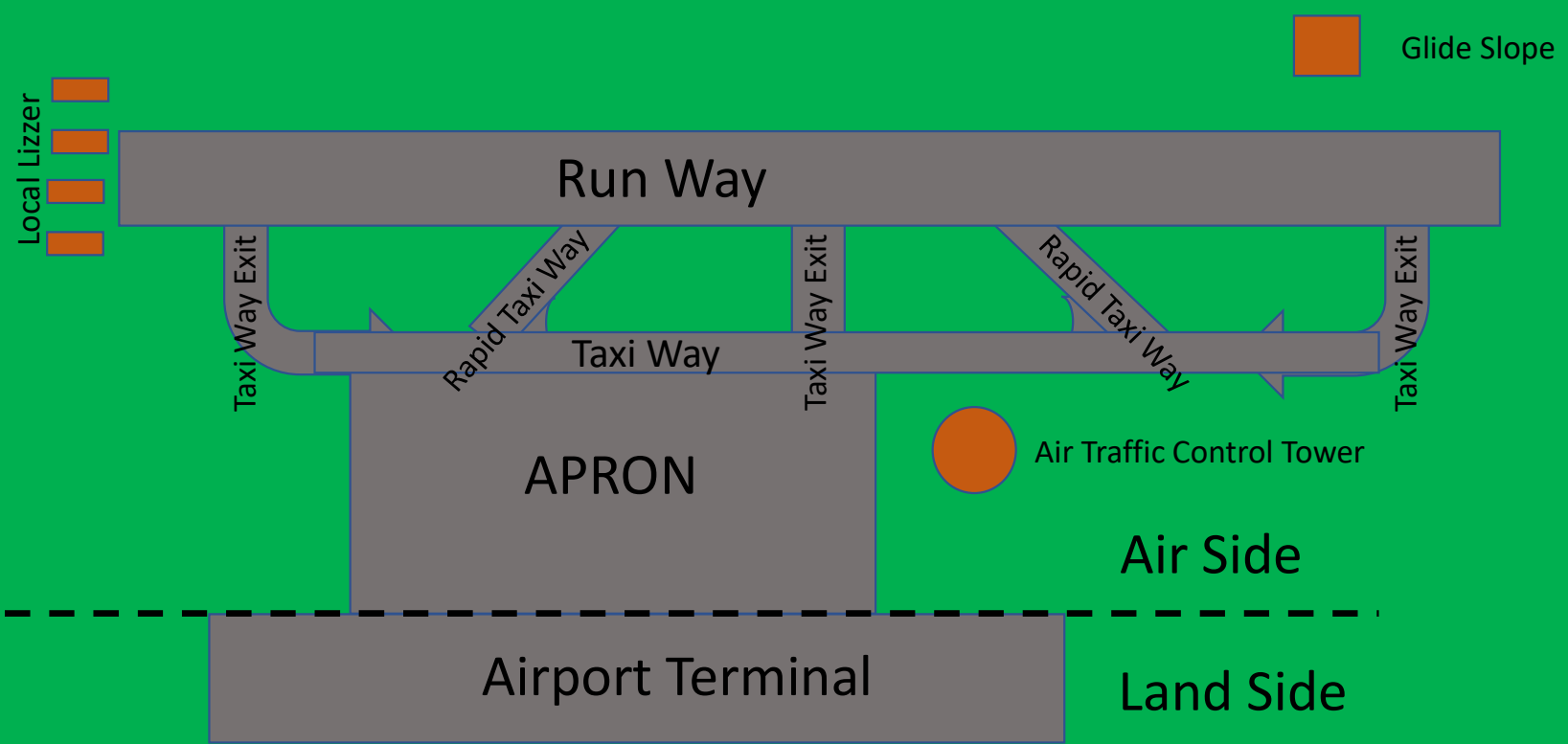
**Creation , Innovation**

**I would like to show my ( 5 ) creation**

- 1) Airfield lighting control system (SCADA)**
- 2) Sequential Flash Lighting System**
- 3) Runway Threshold Identification Light (RTIL)**
- 4) Remote control drive for Cart and Chair**
- 5) Socket Tester**

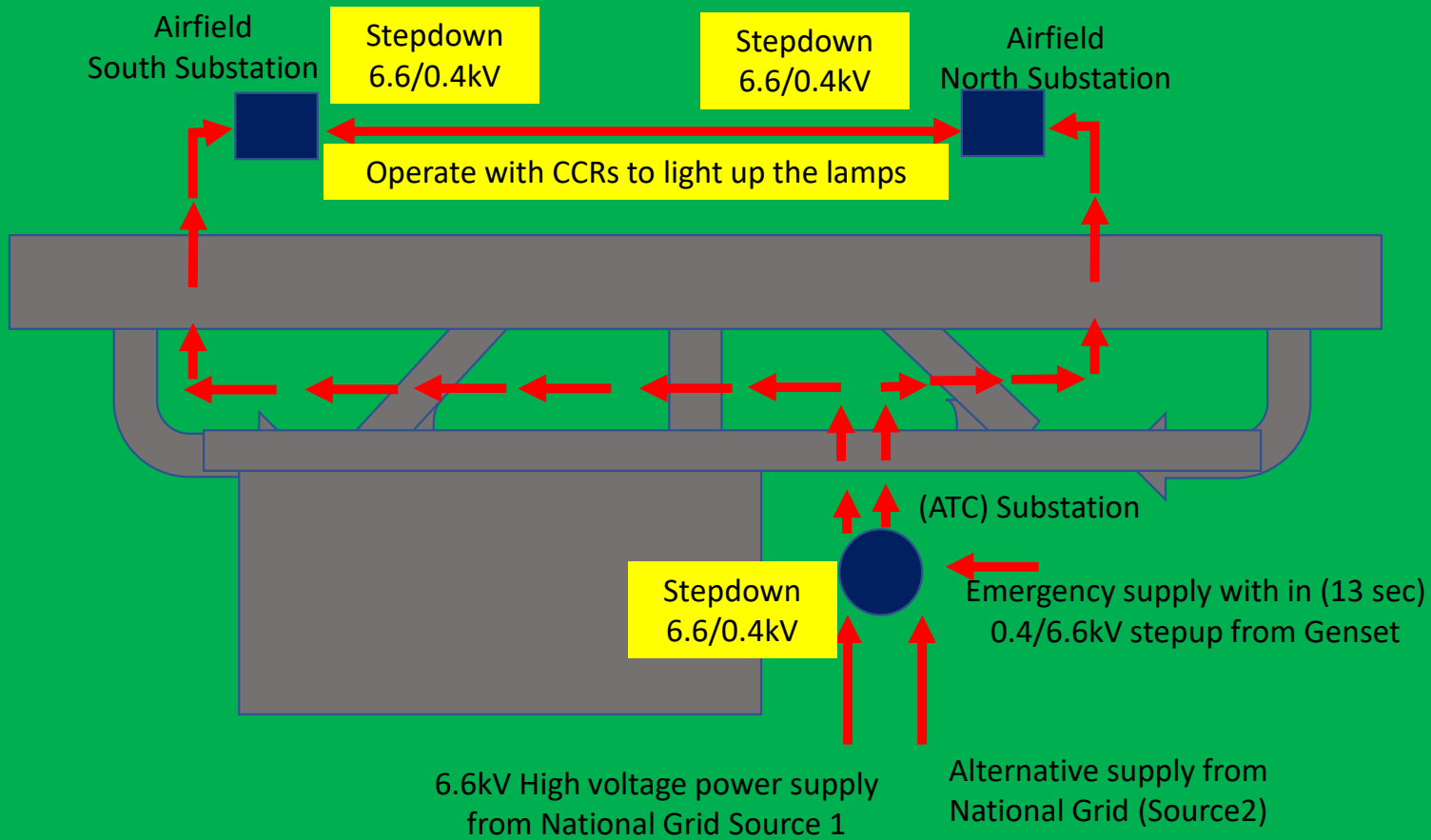
# Basic concept of Airfield ground lighting



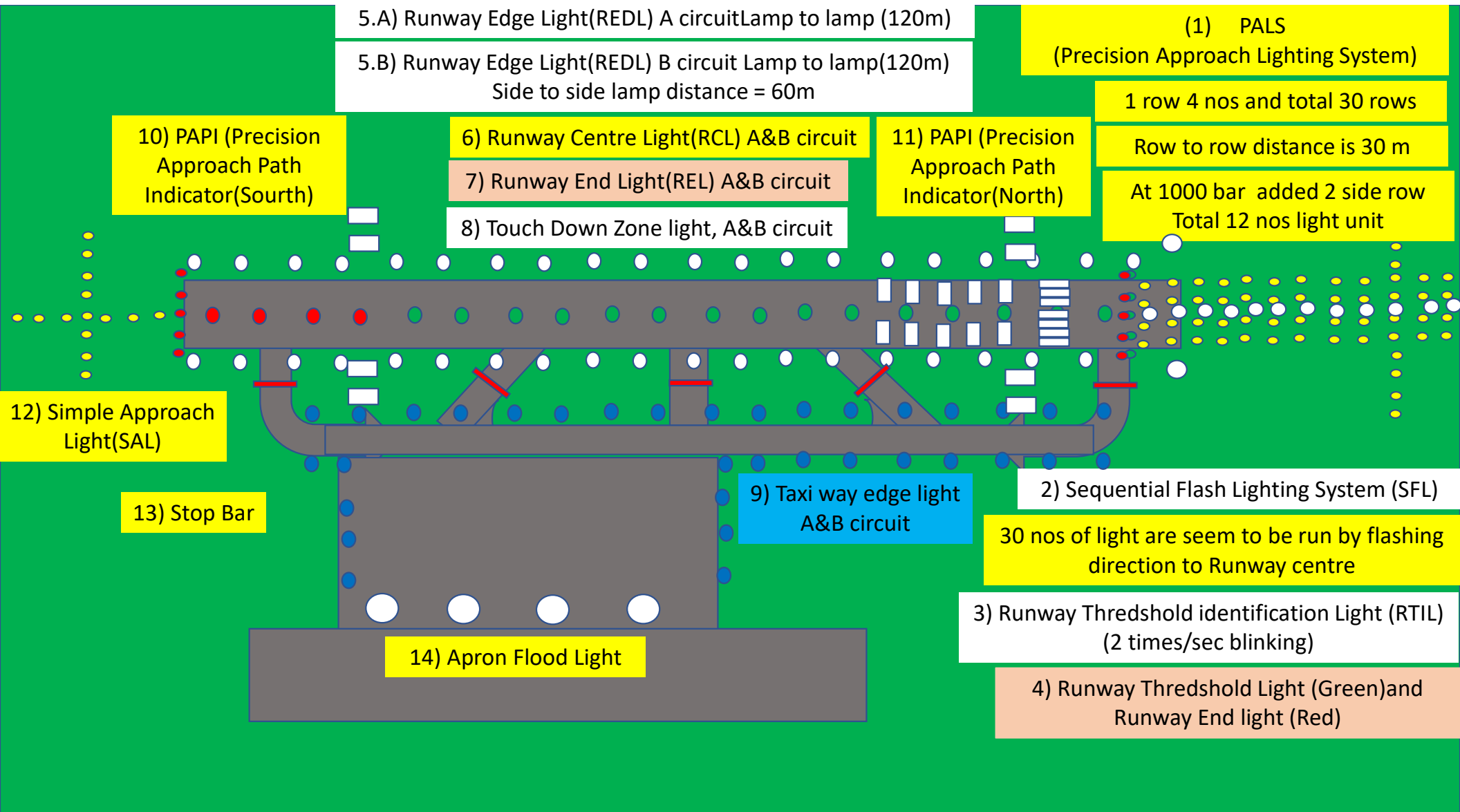


Glide Slope + Localizer = ILS (Instrument Landing System)

# High Voltage power distribution for Airfield Ground Lighting







5.A) Runway Edge Light(REDL) A circuit Lamp to lamp (120m)

5.B) Runway Edge Light(REDL) B circuit Lamp to lamp(120m)  
Side to side lamp distance = 60m

(1) PALS  
(Precision Approach Lighting System)

1 row 4 nos and total 30 rows

Row to row distance is 30 m

At 1000 bar added 2 side row  
Total 12 nos light unit

10) PAPI (Precision Approach Path Indicator)(South)

6) Runway Centre Light(RCL) A&B circuit

11) PAPI (Precision Approach Path Indicator)(North)

7) Runway End Light(REL) A&B circuit

8) Touch Down Zone light, A&B circuit

12) Simple Approach Light(SAL)

13) Stop Bar

9) Taxi way edge light A&B circuit

2) Sequential Flash Lighting System (SFL)

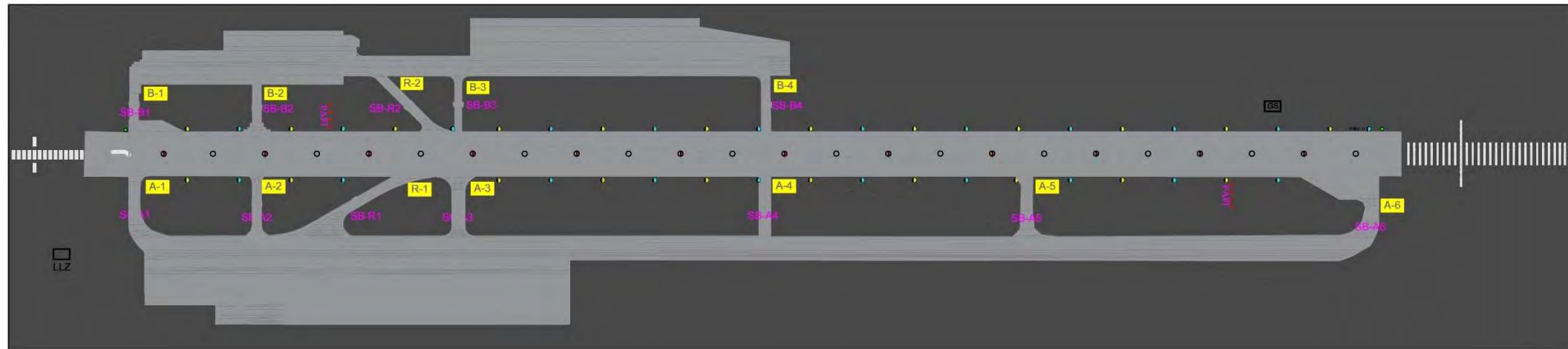
30 nos of light are seem to be run by flashing direction to Runway centre

3) Runway Thredshold identification Light (RTIL)  
(2 times/sec blinking)

14) Apron Flood Light

4) Runway Thredshold Light (Green)and Runway End light (Red)

# Yangon International Airport Runway



What is existing airfield lighting control



Existing airfield lighting control desk

That control desk had installed since 35 year ago

**“This control desk is out of date”**

**Need to replace with modernized ONE.**



Our Team visit to China

## Study to Airfield Lighting





**Discussion about airfield lighting control systems**



After China trip  
we are thinking

What they do?, How can they do?

We realized that

They make money not like this way

Wait Long Time = get



Short Time = get a lot of

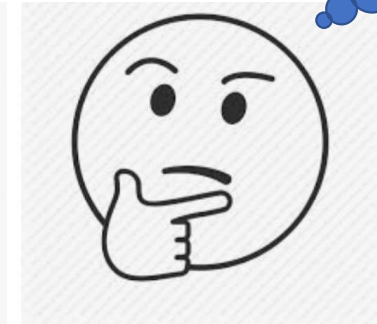


Thinking & Awareness

We analysis on it, we look precisely,  
Our requirement system is not small  
amount  
After received the quotation. Wwwwooo!!!!

We get the IDEA

!!!



Emoji, possible solutions, thinki...

How can we do Aeronautical  
ground lighting control system?



**Technology**

can find the

solution

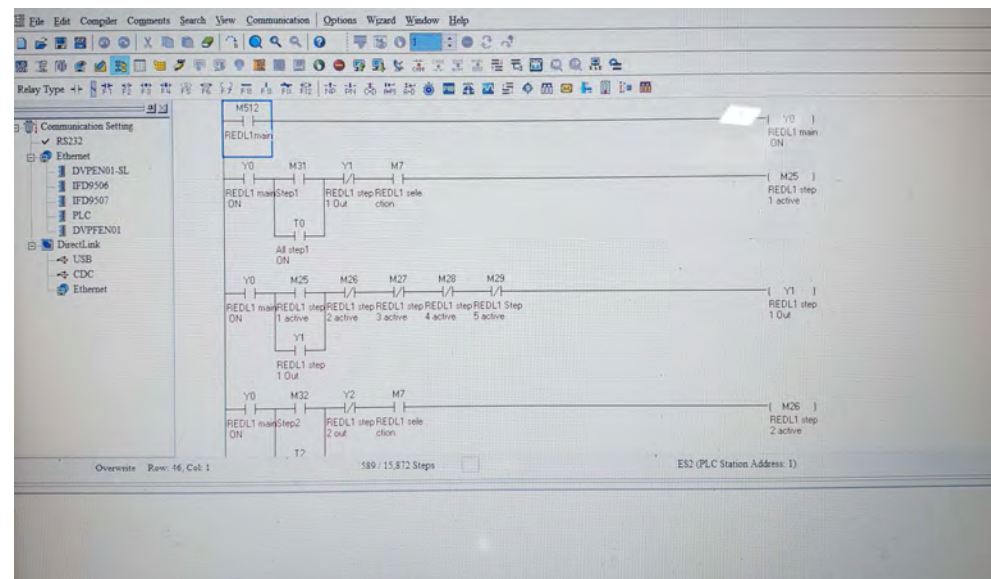
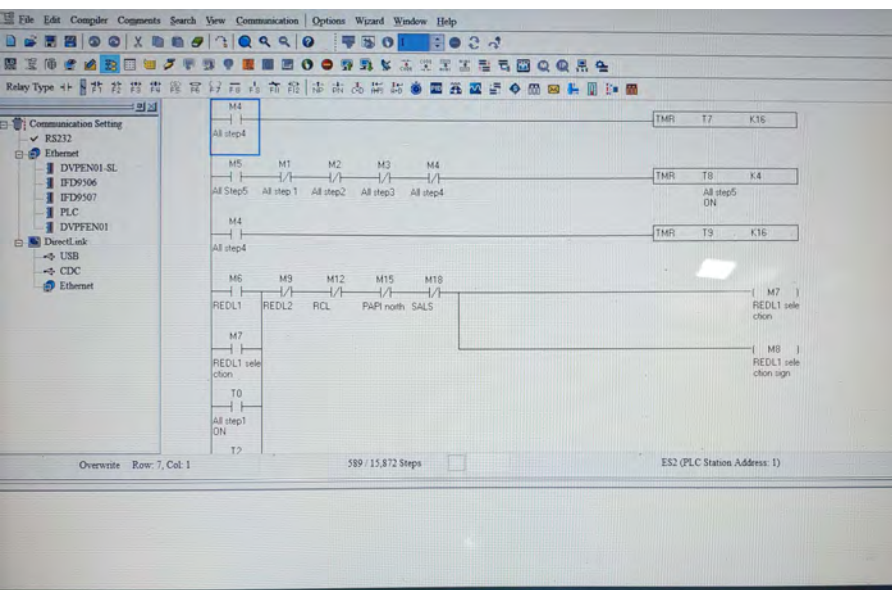
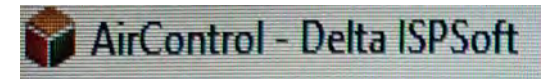
We initiate the implementation System by ourselves



# Learning of PLC programming

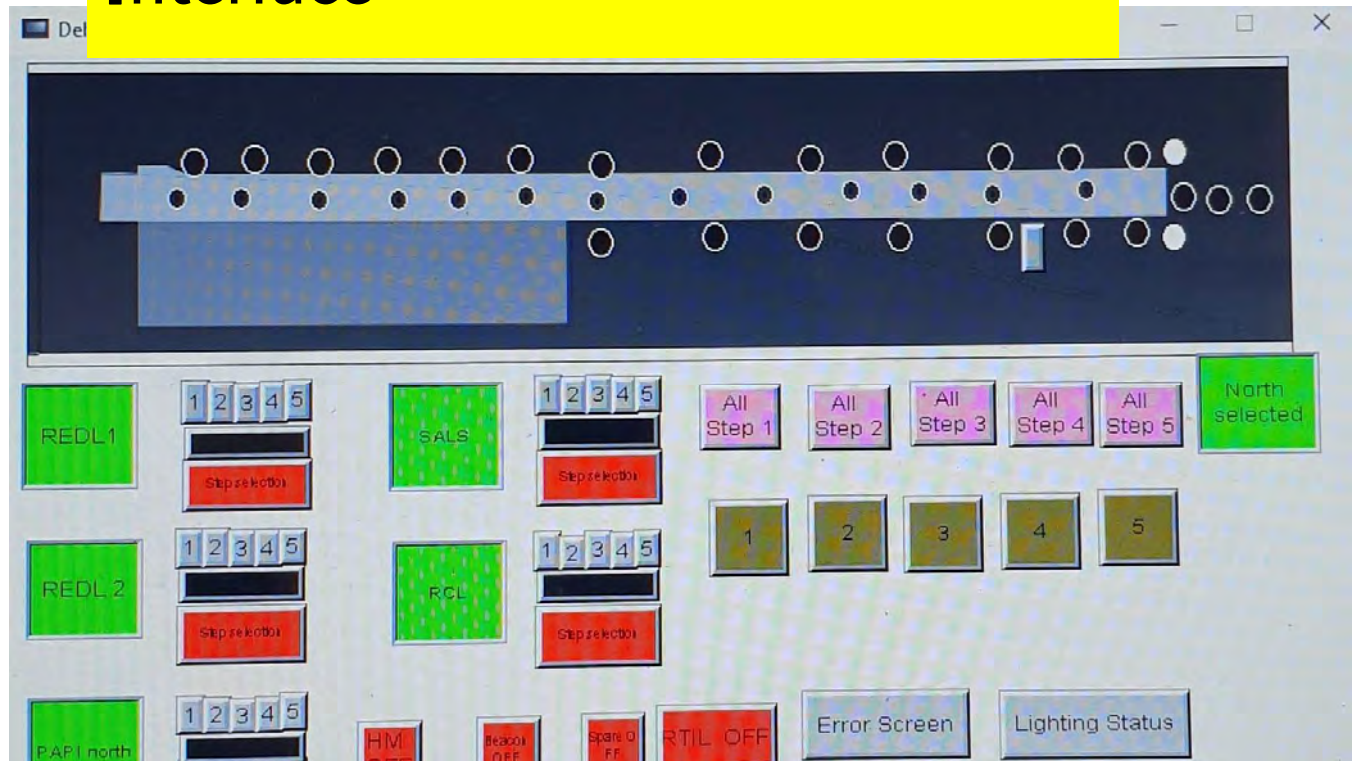
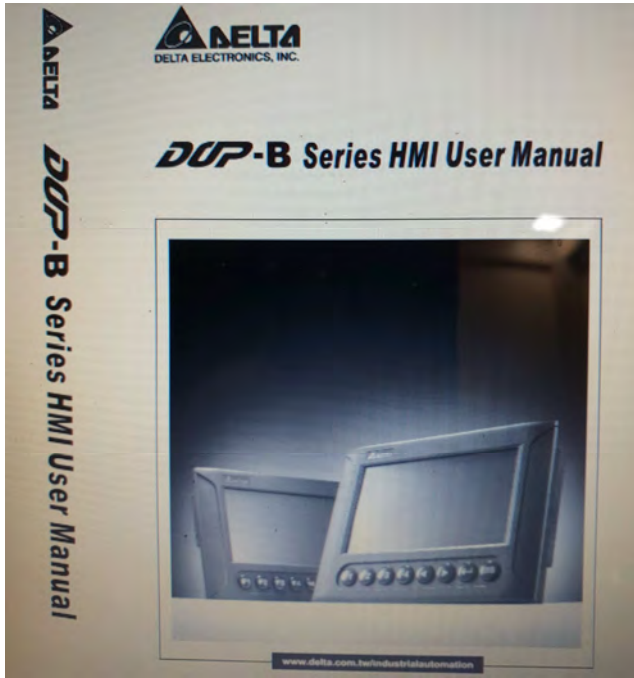


Programmable  
Logic  
Control



# Learning of HMI Development

## Human Machine Interface





## Development Environment

DIA View SCADA  
Control

Learning of SCADA Control Development Environment

**Supervisory Control And Data Acquisition**



## Runtime Environment

DIA View SCADA  
Control

After learned that mentioned above

PLC programming

HMI Development

SCADA Development and Environment

The concept of Aeronautical Ground Lighting Control is come out.

# The concept of Operation Screen programmed by myself

The screenshot displays a fire alarm control panel (FACP) interface. The top portion features a floor plan with zones labeled A-1 through A-6 and B-1 through B-4. The bottom portion is a control interface with numerous buttons for 'Main' and 'R' (Reset) functions for each zone, 'All Step' buttons, and status indicators for 'Fault Alarm' and 'EMERGENCY BELL'. It also includes communication buttons for 'Message to South, North, Eng room' and 'Message to Fire Station, North South Eng room', and navigation buttons like 'Exit', 'Error Page', and 'Operation Status'.

03 Selected

21 Selected

REDL1

REDL2Main

PAPI03Main

PAPI21Main

SALS Main

BTEDLMain

SB B1Main

SB B2Main

SBR2Main

SBA1Main

SBA2Main

SBR1Main

SBA3Main

SBA4Main

SB B2

SB R2

SB A1

SB A2

SB R1

SB A3

SB A4

All Step1

All Step2

All Step3

All Step4

All Step5

1

2

3

4

5

Message to South, North, Eng room

Fault Alarm

Message to Fire Station, North South Eng room

EMERGENCY BELL

RCL1Main

RCL2Main

PALS1 Main

PALS2 Main

TedIA6Main

SB A5 Main

RCL 1

RCL 2

PALS 1

PALS 2

TEDL A6

SB A5

SB A6 Main

SBB3Main

Sb b4 Main

TEDLA123Ma

TedIA5A4Main

SB A6

SB B3

SB B4

TEDLA123

TEDLA5A4

RTIL03

DOL03-1

DOL03-2

DOL 3

Exit

Error Page

Operation Status

Operation Stat

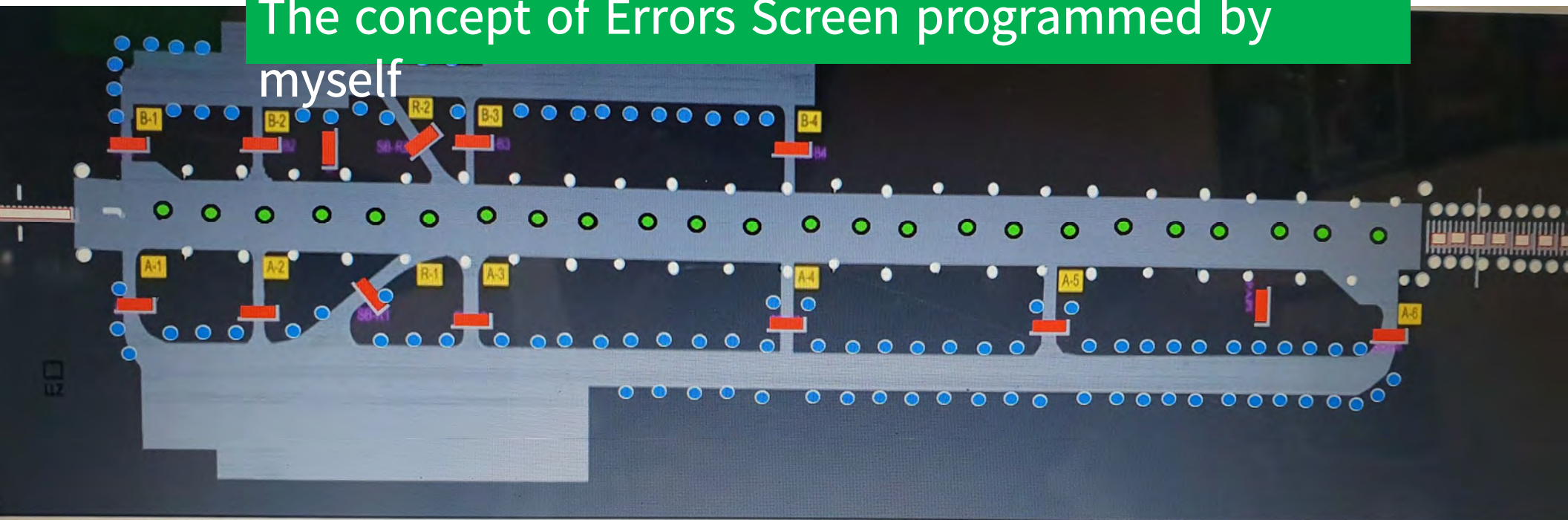
RTIL 21

HighmastB

SFL 21

HighmastC

# The concept of Errors Screen programmed by myself

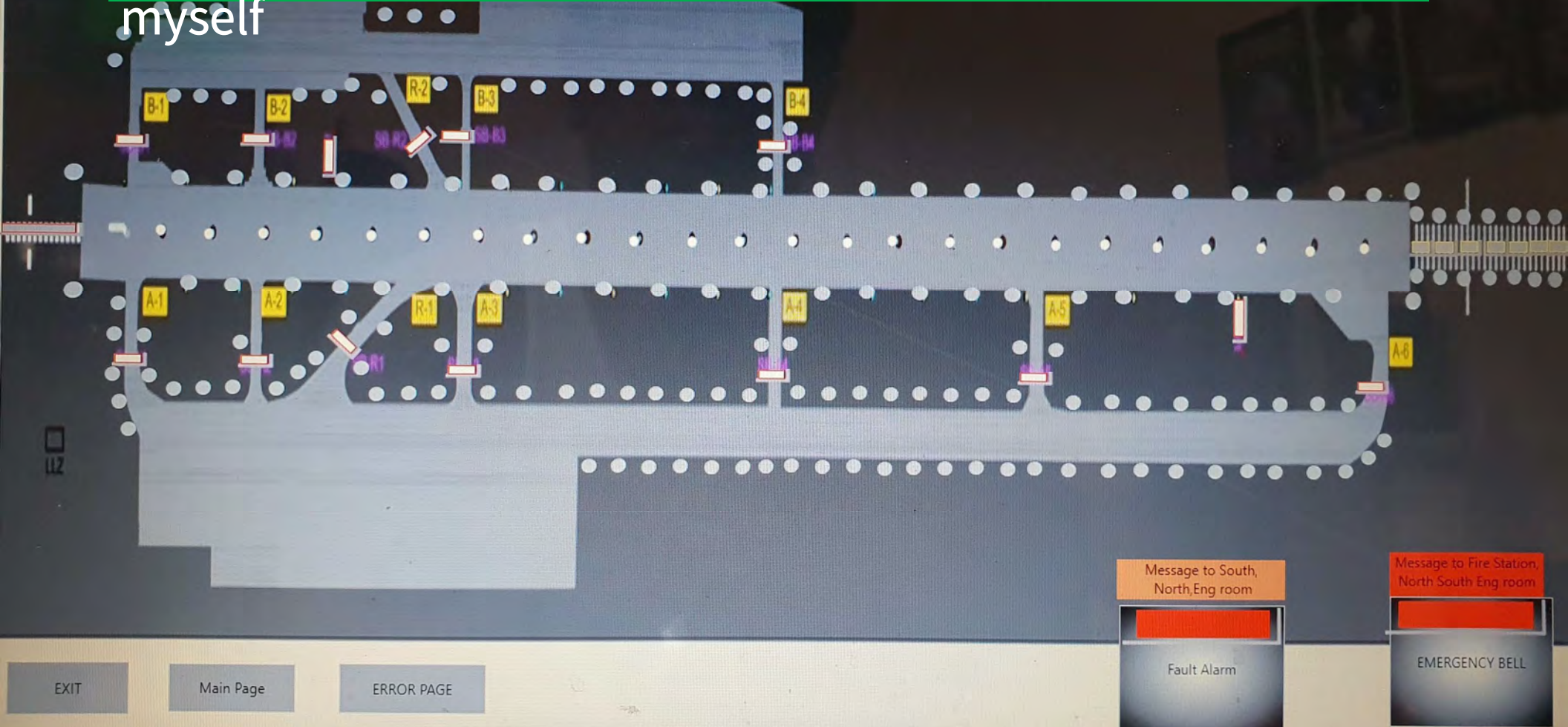


Control panel interface with various buttons and indicators:

- Message to South, North, Eng room** (orange button)
- Message to Fire Station, North South Eng room** (red button)
- Fault Alarm** (blue button)
- EMERGENCY BELL** (blue button)
- Exit** (blue button)
- Main Page** (blue button)
- Operation Status** (blue button)
- Operation signal** (blue button)
- REDL1** (text label)
- SB B2**, **SB R2**, **SB A1**, **SB A2**, **SB R1**, **SB A3**, **SB A4** (green buttons)
- RTIL 03**, **DOL 3**, **DOL 03-1**, **DOL 03-2** (green buttons)
- RCL1**, **RCL2**, **PALS1**, **PALS2**, **TEDLA6**, **TEDLA5A4**, **SB A5** (green buttons)
- SB A6**, **SB B3**, **SB B4**, **TEDL 123**, **RTIL 21**, **DOL 21-1**, **SFL 21**, **DOL 21-2** (green buttons)

YANGON INTERNATIONAL AIRPORT  
AIRFIELD GROUND LIGHTING CONTROL SYSTEM

The concept of lighting status Screen programmed by myself



I proposed my concept of Airfield Lighting Control System to project management.

I get the agreement and advise from management, contact to professional programmer team because they know their professional work more than me.

After discussion, coordination, explained operation function requirements, the **Aeronautical Ground Lighting Control System** has completed



# Log In View

Monday, July 1, 2019

6:04:42 PM



## Yangon International Airport Aeronautical Ground Lighting

Welcome :: SystemAdmin

Log in

Log out

Operation

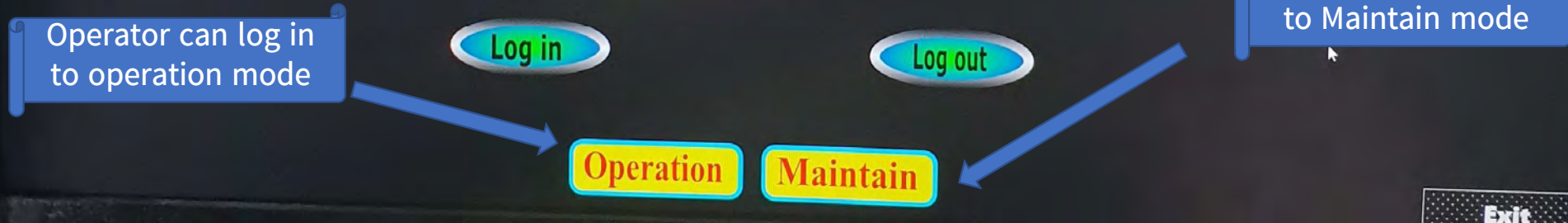
Maintain

Exit

With different password

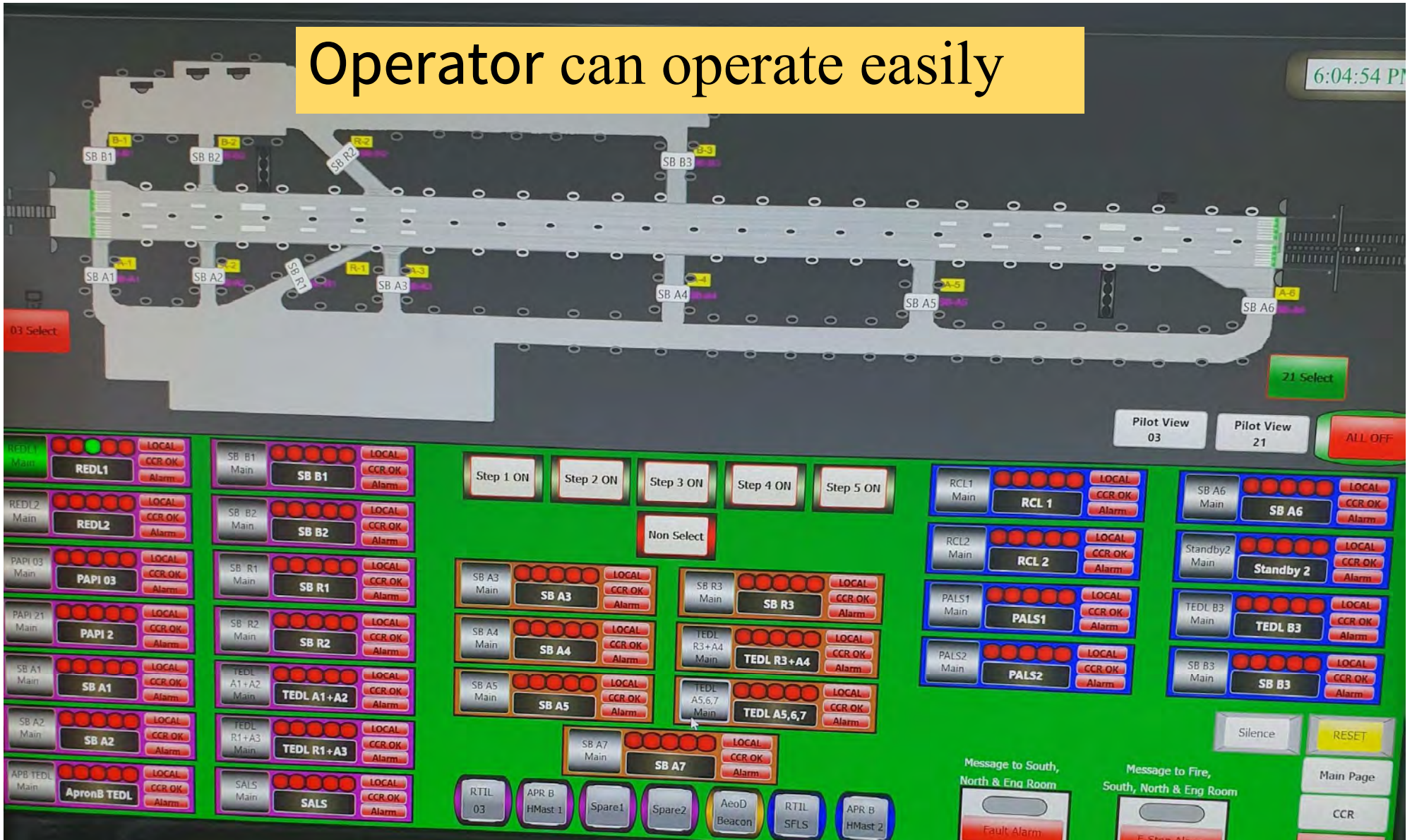
Engineer can log in to Maintain mode

Operator can log in to operation mode



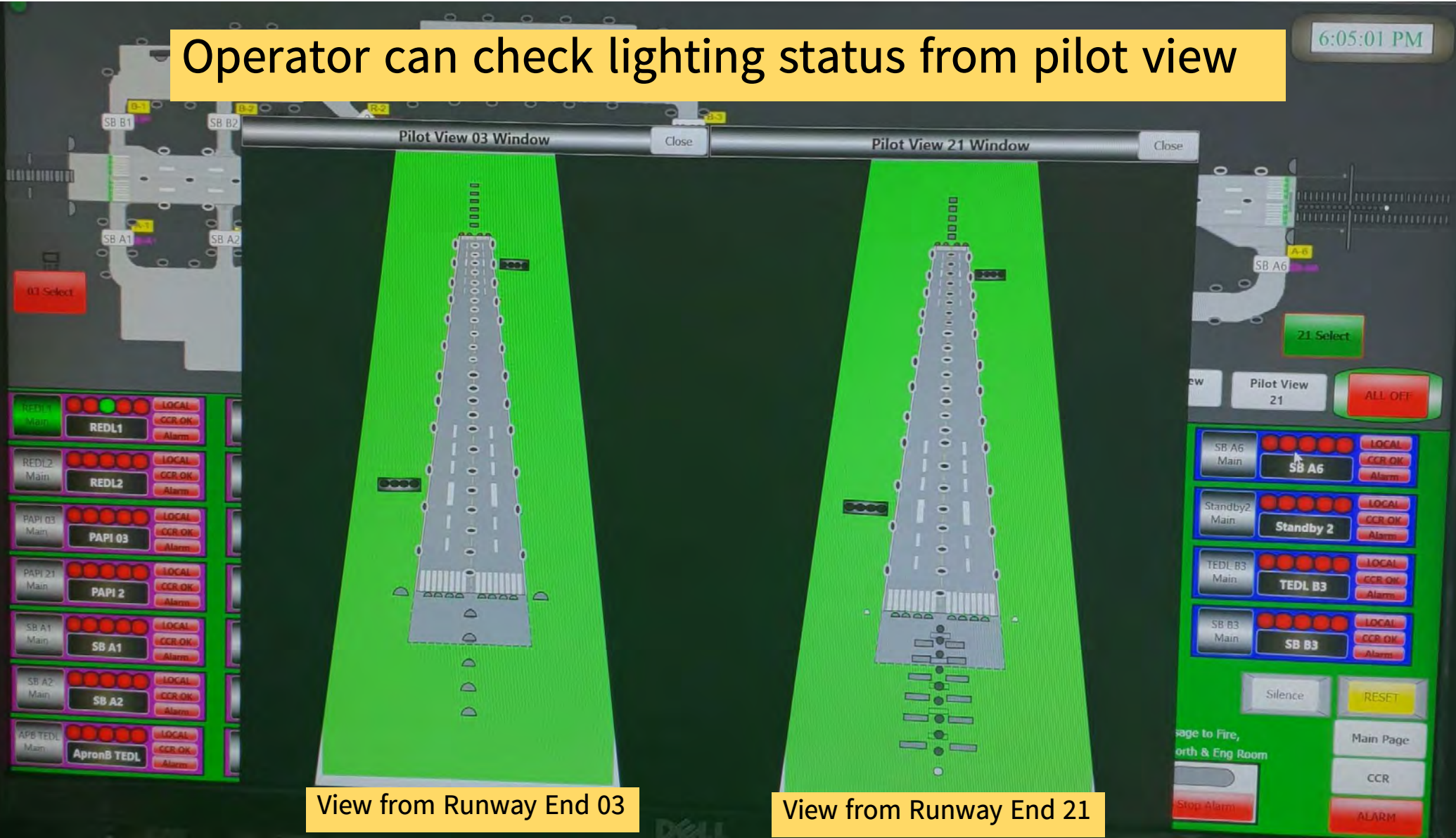
# Operator can operate easily

6:04:54 PM



Operator can check lighting status from pilot view

6:05:01 PM

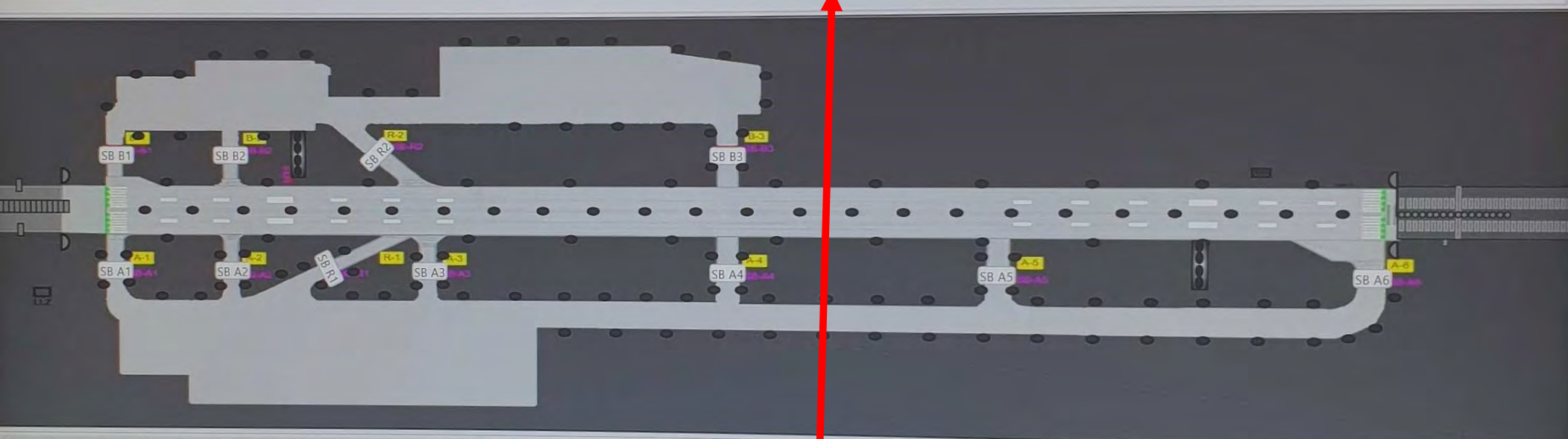


View from Runway End 03

View from Runway End 21

>> Real Time Alarm

Alarm Name	Trigger Time	Ack Time	Recovery Time	Record Type	Describe
Alarm_RED_L1_Warn	7/1/2019 6:03:21 PM			Alarm	REDL_1 CCR Can not Feedback OK Signal, Check wire and Connection



Custom >> History Alarm

Alarm Name	Trigger Time	Ack Time	Recovery Time	Describe
------------	--------------	----------	---------------	----------

**REDL1 CCR can not feedback OK signal, Check wire and connection**

ALARM  
CCR

### PLC Output Checking Window

Y 0.1	REDL 1 Main Output	Y 0.8	PAPI 21 Main Output	Y 1.0	SB B2 Main Output	Y 0.2	TEDL R1+A3 Main Output	Y 0.8	SB A4 Step4 Output
Y 0.2	REDL 1 Step1 Output	Y 0.9	PAPI 21 Step1 Output	Y 1.1	SB B2 Step1 Output	Y 0.3	TEDL R1+A3 Step1 Output	Y 0.3	SB A4 Step5 Output
Y 0.3	REDL 1 Step2 Output	Y 1.0	PAPI 21 Step2 Output	Y 1.2	SB B2 Step2 Output	Y 0.4	TEDL R1+A3 Step2 Output	Y 0.4	SB A5 Main Output
Y 0.4	REDL 1 Step3 Output	Y 1.1	PAPI 21 Step3 Output	Y 1.3	SB B2 Step3 Output	Y 0.5	TEDL R1+A3 Step3 Output	Y 0.5	SB A5 Step1 Output
Y 0.5	REDL 1 Step4 Output	Y 1.2	PAPI 21 Step4 Output	Y 1.4	SB B2 Step4 Output	Y 0.6	TEDL R1+A3 Step4 Output	Y 0.6	SB A5 Step2 Output
Y 0.6	REDL 1 Step5 Output	Y 1.3	PAPI 21 Step5 Output	Y 1.5	SB B2 Step5 Output	Y 0.7	TEDL R1+A3 Step5 Output	Y 0.7	SB A5 Step3 Output
Y 0.7	REDL 2 Main Output	Y 1.4	SB A1 Main Output	Y 1.6	SB R1 Main Output	Y 0.8	SALS Main Output	Y 0.8	SB A5 Step4 Output
Y 0.8	REDL 2 Step1 Output	Y 1.5	SB A1 Step1 Output	Y 1.7	SB R1 Step1 Output	Y 0.9	SALS Step1 Output	Y 0.9	SB A5 Step5 Output
Y 0.9	REDL 2 Step2 Output	Y 1.6	SB A1 Step2 Output	Y 1.8	SB R1 Step2 Output	Y 1.0	SALS Step2 Output	Y 1.0	SB A7 Main Output
Y 1.0	REDL 2 Step3 Output	Y 1.7	SB A1 Step3 Output	Y 1.9	SB R1 Step3 Output	Y 1.1	SALS Step3 Output	Y 1.1	SB A7 Step1 Output
Y 1.1	REDL 2 Step4 Output	Y 1.8	SB A1 Step4 Output	Y 2.0	SB R1 Step4 Output	Y 1.2	SALS Step4 Output	Y 1.2	SB A7 Step2 Output
Y 1.2	REDL 2 Step5 Output	Y 1.9	SB A1 Step5 Output	Y 2.1	SB R1 Step5 Output	Y 1.3	SALS Step5 Output	Y 1.3	SB A7 Step3 Output
Y 1.3	Stand by 1 Main Output	Y 2.0	ApronB TEDL Main Output	Y 2.2	SB R2 Main Output	Y 1.4	RTIL 03 Output	Y 1.4	SB A7 Step4 Output
Y 1.4	Stand by 1 Step1 Output	Y 2.1	ApronB TEDL Step1 Output	Y 2.3	SB R2 Step1 Output	Y 1.5	Apron B Highmast1 Output	Y 1.5	SB A7 Step5 Output
Y 1.5	Stand by 1 Step2 Output	Y 2.2	ApronB TEDL Step2 Output	Y 2.4	SB R2 Step2 Output	Y 1.6	SB A3 Main Output	Y 1.6	SB R3 Main Output
Y 1.6	Stand by 1 Step3 Output	Y 2.3	ApronB TEDL Step3 Output	Y 2.5	SB R2 Step3 Output	Y 1.7	SB A3 Step1 Output	Y 1.7	SB R3 Step1 Output
Y 1.7	Stand by 1 Step4 Output	Y 2.4	ApronB TEDL Step4 Output	Y 2.6	SB R2 Step4 Output	Y 1.8	SB A3 Step2 Output		
Y 1.8	Stand by 1 Step5 Output	Y 2.5	ApronB TEDL Steps Output	Y 2.7	SB R2 Step5 Output	Y 1.9	SB A3 Step3 Output		
Y 1.9	PAPI 03 1 Main Output	Y 3.0	SB B1 Main Output	Y 2.8	TEDL A1+A2 Main Output	Y 2.0	SB A3 Step4 Output		
Y 2.0	PAPI 03 Step1 Output	Y 3.1	SB B1 Step1 Output	Y 2.9	TEDL A1+A2 Step1 Output	Y 2.1	SB A3 Step5 Output		
Y 2.1	PAPI 03 Step2 Output	Y 3.2	SB B1 Step2 Output	Y 3.0	TEDL A1+A2 Step2 Output	Y 2.2	SB A4 Main Output		
Y 2.2	PAPI 03 Step3 Output	Y 3.3	SB B1 Step3 Output	Y 3.1	TEDL A1+A2 Step3 Output				
Y 2.3	PAPI 03 Step4 Output	Y 3.4	SB B1 Step4 Output	Y 3.2	TEDL A1+A2 Step4 Output				
Y 2.4	PAPI 03 Step5 Output	Y 3.5	SB B1 Step5 Output	Y 3.3	TEDL A1+A2 Step5 Output				

### PLC Input Checking Window

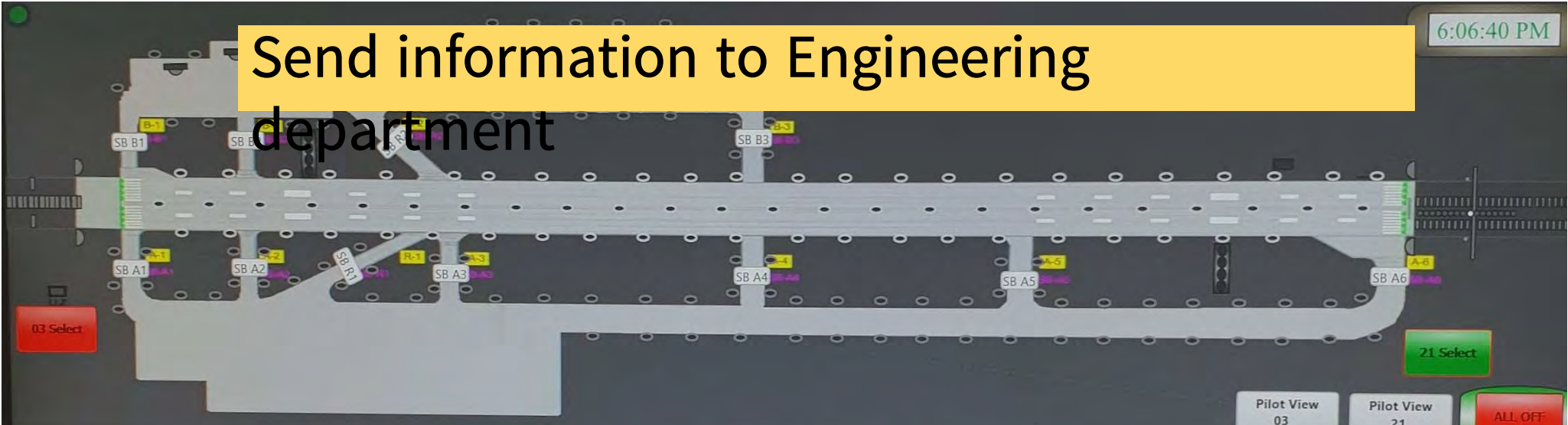
X 0.0	Fault Warning Signal	X 1.0	SB B1 OK Signal	X 2.0	SB A4 Fault Signal	X 3.0	RCL 2 Local Signal	X 4.0	TD2 Local Signal
X 0.1	Emergency Stop Signal	X 1.1	SB B1 Fault Signal	X 2.1	SB A3 Fault Signal	X 3.1	RCL 2 OK Signal	X 4.1	TD2 OK Signal
X 0.2	Reserve 1	X 1.2	SB B2 Local Signal	X 2.2	SB A4 Local Signal	X 3.2	RCL 2 Fault Signal	X 4.2	TD2 Fault Signal
X 0.3	Reserve 2	X 1.3	SB B2 OK Signal	X 2.3	SB A4 OK Signal	X 3.3	PALS 1 Local Signal	X 4.3	TD2 Fault Feedback
X 0.4	REDL1 Local Signal	X 1.4	SB B2 Fault Signal	X 2.4	SB A5 OK Signal	X 3.4	PALS 1 OK Signal	X 4.4	Reset Push bottom
X 0.5	REDL1 OK Signal	X 1.5	SB B1 Local Signal	X 2.5	SB A5 Local Signal	X 3.5	PALS 1 Fault Signal	X 4.5	SB A2 Local Signal
X 0.6	REDL1 Fault Signal	X 1.6	SB R1 Local Signal	X 2.6	SB A5 OK Signal	X 3.6	PALS 2 Local Signal	X 4.6	SB A3 Local Signal
X 0.7	REDL2 Local Signal	X 1.7	SB R1 OK Signal	X 2.7	SB A5 Fault Signal	X 3.7	PALS 2 OK Signal	X 4.7	SB A2 Fault Signal
X 0.8	REDL2 OK Signal	X 1.8	SB R1 Fault Signal	X 2.8	SB A7 Local Signal	X 3.8	PALS 2 Fault Signal	X 4.8	Spare CCR Local Signal
X 0.9	REDL2 Fault Signal	X 1.9	SB R2 Local Signal	X 2.9	SB A7 OK Signal	X 3.9	SB A6 Local Signal	X 4.9	Spare CCR OK Signal
X 1.0	Standby 1 Local Signal	X 2.0	SB R2 OK Signal	X 3.0	SB A7 Fault Signal	X 4.0	SB A6 OK Signal	X 5.0	Spare CCR Fault Signal
X 1.1	Standby 1 OK Signal	X 2.1	SB R2 Fault Signal	X 3.1	TEDL A1+A2 Local Signal	X 4.1	X 6.11 Reserve		
X 1.2	Standby 1 Fault Signal	X 2.2	TEDL A1+A2 OK Signal	X 3.2	TEDL A1+A2 Fault Signal	X 4.2	X 6.12 Reserve		
X 1.3	PAPI 03 Local Signal	X 2.3	TEDL A1+A2 Fault Signal	X 3.3	TEDL R3+A4 Local Signal	X 4.3	X 6.13 Reserve		
X 1.4	PAPI 03 OK Signal	X 2.4	TEDL R3+A4 Local Signal	X 3.4	TEDL R3+A4 OK Signal	X 4.4	X 6.14 Reserve		
X 1.5	PAPI 03 Fault Signal	X 2.5	TEDL R3+A4 Fault Signal	X 3.5	TEDL R3+A4 Fault Signal	X 4.5	X 6.15 Reserve		
X 1.6	PAPI 21 Local Signal	X 2.6	TEDL R3+A4 OK Signal	X 3.6	TEDL A5+A6+A7 Local Signal	X 4.6			
X 1.7	PAPI 21 OK Signal	X 2.7	TEDL A5+A6+A7 Local Signal	X 3.7	TEDL A5+A6+A7 OK Signal	X 4.7			
X 1.8	PAPI 21 Fault Signal	X 2.8	TEDL A5+A6+A7 OK Signal	X 3.8	TEDL A5+A6+A7 Fault Signal	X 4.8			
X 1.9	SB A1 Local Signal	X 2.9	SALS Local Signal	X 3.9	Aerodrome Beacon On Feedback	X 4.9			
X 2.0	SB A1 OK Signal	X 3.0	SALS OK Signal	X 4.0	RCL 1 Local Signal	X 5.0			
X 2.1	SB A1 Fault Signal	X 3.1	RTIL 02 Feedback Signal	X 4.1		X 5.1			
X 2.2	ApronB TEDL Local Signal	X 3.2		X 4.2					
X 2.3	ApronB TEDL OK Signal	X 3.3		X 4.3					
X 2.4	ApronB TEDL Fault Signal	X 3.4		X 4.4					

Maintenance engineer can easily check that proper function or not.

Y 0.1	REDL 1 Main Output	Y 0.8	PAPI 21 Main Output	Y 1.0	SB B2 Main Output	Y 0.2	TEDL R1+A3 Main Output	Y 0.8	SB A4 Step4 Output
Y 0.2	REDL 1 Step1 Output	Y 0.9	PAPI 21 Step1 Output	Y 1.1	SB B2 Step1 Output	Y 0.3	TEDL R1+A3 Step1 Output	Y 0.3	SB A4 Step5 Output
Y 0.3	REDL 1 Step2 Output	Y 1.0	PAPI 21 Step2 Output	Y 1.2	SB B2 Step2 Output	Y 0.4	TEDL R1+A3 Step2 Output	Y 0.4	SB A5 Main Output
Y 0.4	REDL 1 Step3 Output	Y 1.1	PAPI 21 Step3 Output	Y 1.3	SB B2 Step3 Output	Y 0.5	TEDL R1+A3 Step3 Output	Y 0.5	SB A5 Step1 Output
Y 0.5	REDL 1 Step4 Output	Y 1.2	PAPI 21 Step4 Output	Y 1.4	SB B2 Step4 Output	Y 0.6	TEDL R1+A3 Step4 Output	Y 0.6	SB A5 Step2 Output
Y 0.6	REDL 1 Step5 Output	Y 1.3	PAPI 21 Step5 Output	Y 1.5	SB B2 Step5 Output	Y 0.7	TEDL R1+A3 Step5 Output	Y 0.7	SB A5 Step3 Output
Y 0.7	REDL 2 Main Output	Y 1.4	SB A1 Main Output	Y 1.6	SB R1 Main Output	Y 0.8	SALS Main Output	Y 0.8	SB A5 Step4 Output
Y 0.8	REDL 2 Step1 Output	Y 1.5	SB A1 Step1 Output	Y 1.7	SB R1 Step1 Output	Y 0.9	SALS Step1 Output	Y 0.9	SB A5 Step5 Output
Y 0.9	REDL 2 Step2 Output	Y 1.6	SB A1 Step2 Output	Y 1.8	SB R1 Step2 Output	Y 1.0	SALS Step2 Output	Y 1.0	SB A7 Main Output
Y 1.0	REDL 2 Step3 Output	Y 1.7	SB A1 Step3 Output	Y 1.9	SB R1 Step3 Output	Y 1.1	SALS Step3 Output	Y 1.1	SB A7 Step1 Output
Y 1.1	REDL 2 Step4 Output	Y 1.8	SB A1 Step4 Output	Y 2.0	SB R1 Step4 Output	Y 1.2	SALS Step4 Output	Y 1.2	SB A7 Step2 Output
Y 1.2	REDL 2 Step5 Output	Y 1.9	SB A1 Step5 Output	Y 2.1	SB R1 Step5 Output	Y 1.3	SALS Step5 Output	Y 1.3	SB A7 Step3 Output
Y 1.3	Stand by 1 Main Output	Y 2.0	ApronB TEDL Main Output	Y 2.2	SB R2 Main Output	Y 1.4	RTIL 03 Output	Y 1.4	SB A7 Step4 Output
Y 1.4	Stand by 1 Step1 Output	Y 2.1	ApronB TEDL Step1 Output	Y 2.3	SB R2 Step1 Output	Y 1.5	Apron B Highmast1 Output	Y 1.5	SB A7 Step5 Output
Y 1.5	Stand by 1 Step2 Output	Y 2.2	ApronB TEDL Step2 Output	Y 2.4	SB R2 Step2 Output	Y 1.6	SB A3 Main Output	Y 1.6	SB R3 Main Output
Y 1.6	Stand by 1 Step3 Output	Y 2.3	ApronB TEDL Step3 Output	Y 2.5	SB R2 Step3 Output	Y 1.7	SB A3 Step1 Output	Y 1.7	SB R3 Step1 Output
Y 1.7	Stand by 1 Step4 Output	Y 2.4	ApronB TEDL Step4 Output	Y 2.6	SB R2 Step4 Output	Y 1.8	SB A3 Step2 Output		
Y 1.8	Stand by 1 Step5 Output	Y 2.5	ApronB TEDL Steps Output	Y 2.7	SB R2 Step5 Output	Y 1.9	SB A3 Step3 Output		
Y 1.9	PAPI 03 1 Main Output	Y 3.0	SB B1 Main Output	Y 2.8	TEDL A1+A2 Main Output	Y 2.0	SB A3 Step4 Output		
Y 2.0	PAPI 03 Step1 Output	Y 3.1	SB B1 Step1 Output	Y 2.9	TEDL A1+A2 Step1 Output	Y 2.1	SB A3 Step5 Output		
Y 2.1	PAPI 03 Step2 Output	Y 3.2	SB B1 Step2 Output	Y 3.0	TEDL A1+A2 Step2 Output	Y 2.2	SB A4 Main Output		
Y 2.2	PAPI 03 Step3 Output	Y 3.3	SB B1 Step3 Output	Y 3.1	TEDL A1+A2 Step3 Output	Y 2.3	SB A4 Step1 Output		
Y 2.3	PAPI 03 Step4 Output	Y 3.4	SB B1 Step4 Output	Y 3.2	TEDL A1+A2 Step4 Output	Y 2.4	SB A4 Step2 Output		
Y 2.4	PAPI 03 Step5 Output	Y 3.5	SB B1 Step5 Output	Y 3.3	TEDL A1+A2 Step5 Output	Y 2.5	SB A4 Step3 Output		

Y 10.0	TEDL R3+R4 Step4 Output	Y 10.6	PALS 1 Step3 Output	Y 11.2	TEDL B3 Step3 Output	Y 11.8	SB A2 Main Output	Y 14.8	
Y 10.1	TEDL R3+R4 Step5 Output	Y 10.7	PALS 1 Step4 Output	Y 11.3	TEDL B3 Step4 Output	Y 11.9	SB A2 Step1 Output	Y 14.9	
Y 10.2	TEDL A5+A6+A7 Main Output	Y 10.8	PALS 1 Step5 Output	Y 11.4	TEDL B3 Step5 Output	Y 12.0	SB A2 Step2 Output	Y 14.10	
Y 10.3	TEDL A5+A6+A7 Step2 Output	Y 10.9	PALS 2 Main Output	Y 11.5	SB B3 Main Output	Y 12.1	SB A2 Step3 Output	Y 14.11	
Y 10.4	TEDL A5+A6+A7 Step3 Output	Y 11.0	PALS 2 Step1 Output	Y 11.6	SB B3 Step1 Output	Y 12.2	SB A2 Step4 Output	Y 14.12	
Y 10.5	TEDL A5+A6+A7 Step4 Output	Y 11.1	PALS 2 Step2 Output	Y 11.7	SB B3 Step2 Output	Y 12.3	SB A2 Step5 Output	Y 14.13	
Y 10.6	TEDL A5+A6+A7 Step5 Output	Y 11.2	PALS 2 Step3 Output	Y 11.8	SB B3 Step3 Output	Y 12.4	Spare CCR Main Output	Y 14.14	
Y 10.7	Aerodrome Beacon ON	Y 11.3	PALS 2 Step4 Output	Y 11.9	SB R1 Step5 Output	Y 12.5	Spare CCR Step1 Output	Y 14.15	
Y 10.8	RCL 1 Main Output	Y 11.4	PALS 2 Step5 Output	Y 12.0	Spare CCR Step2 Output	Y 12.6	Spare CCR Step2 Output		
Y 10.9	RCL 1 Step1 Output	Y 11.5	SB A6 Main Output	Y 12.1	TD1 Main Output	Y 12.7	Spare CCR Step3 Output		
Y 11.0	RCL 1 Step2 Output	Y 11.6	SB A6 Step1 Output	Y 12.2	TD1 Step1 Output	Y 12.8	Spare CCR Step4 Output		
Y 11.1	RCL 1 Step3 Output	Y 11.7	SB A6 Step2 Output	Y 12.3	TD1 Step2 Output	Y 12.9	Spare CCR Step5 Output		
Y 11.2	RCL 1 Step4 Output	Y 11.8	SB A6 Step3 Output	Y 12.4	TD1 Step3 Output				
Y 11.3	RCL 1 Step5 Output	Y 11.9	SB A6 Step4 Output	Y 12.5	TD1 Step4 Output				
Y 11.4	RCL 2 Main Output	Y 12.0	Standby2 Main Output	Y 12.6	TD1 Step5 Output				

# Send information to Engineering department



Pilot View 03    Pilot View 21    ALL OFF

REDL1 Main    LOCAL CCR OK Alarm

REDL2 Main    LOCAL CCR OK Alarm

PAPI 03 Main    LOCAL CCR OK Alarm

PAPI 21 Main    LOCAL CCR OK Alarm

SB A1 Main    LOCAL CCR OK Alarm

SB A2 Main    LOCAL CCR OK Alarm

APB TEDL Main    LOCAL CCR OK Alarm

SB B1 Main    LOCAL CCR OK Alarm

SB B2 Main    LOCAL CCR OK Alarm

SB R1 Main    LOCAL CCR OK Alarm

SB R2 Main    LOCAL CCR OK Alarm

TEDL A1+A2 Main    LOCAL CCR OK Alarm

TEDL R1+A3 Main    LOCAL CCR OK Alarm

SALS Main    LOCAL CCR OK Alarm

Step 1 ON    Step 2 ON    Step 3 ON    Step 4 ON    Step 5 ON

SB A3 Main    SB A3

SB A4 Main    SB A4

SB A5 Main    SB A5

SB A7 Main    SB A7

RTIL 03    APR B HMast 1    Spare1    Spare2    Aeod Beacon    RTIL SFLS    APR B HMast 2

RCL1 Main    LOCAL CCR OK Alarm

RCL2 Main    LOCAL CCR OK Alarm

PALS1 Main    LOCAL CCR OK Alarm

PALS2 Main    LOCAL CCR OK Alarm

SB A6 Main    LOCAL CCR OK Alarm

Standby2 Main    LOCAL CCR OK Alarm

TEDL B3 Main    LOCAL CCR OK Alarm

SB B3 Main    LOCAL CCR OK Alarm

Are you Sure to Turn On The Fault Indication?

YES

Message to South, North & Eng Room

Fault Alarm

Message to Fire, South, North & Eng Room

E-Stop Alarm

Silence    RESET

Main Page

CCR

ALARM

# Send Alarm information to Engineering department and Fire Station

The image displays a detailed view of an aircraft engine control panel. At the top, a yellow banner contains the text "Send Alarm information to Engineering department and Fire Station". Below this, a grey engine schematic is visible, with various sensors and components labeled (e.g., SB B1, SB B2, SB R2, SB B3, SB A1, SB A2, SB R1, SB A3, SB A4, SB A5, SB A6). The main control area is green and contains numerous buttons for engine parameters and status, such as REDL1, REDL2, PAPI 03, PAPI 21, SB A1, SB A2, APR TEDL, SB B1, SB B2, SB R1, SB R2, TEDL A1+A2, TEDL R1+A3, SALS, SB A3, SB A4, SB A5, SB A7, RCL1, RCL 1, RCL 2, PALS1, PALS2, SB A6, Standby2, TEDL B3, and SB B3. A central dialog box with a red background asks "Are you Sure to Turn On EMERGENCY ALARM ?" with a "YES" button. Other buttons include "Step 1 ON" through "Step 5 ON", "Non Select", "RTIL 03", "APR B HMast 1", "Spare1", "Spare2", "AeoD Beacon", "RTIL SFLS", "APR B HMast 2", "Message to South, North & Eng Room", "Message to Fire, South, North & Eng Room", "Fault Alarm", "E-Stop Alarm", "Pilot View 03", "Pilot View 21", "ALL OFF", "21 Select", "Silence", "RESET", "Main Page", and "CCR". A timestamp "0.07.03 PM" is in the top right corner.

Alarm Name	Trigger Time	Ack Time	Recovery Time	Describe
Alarm REDL1_Warn	7/1/2019 2:15:14 PM		7/1/2019 2:15:50 PM	REDL_1 CCR Can not Feedback OK Signal, Check wire and Connection
Alarm REDL1_Warn	7/1/2019 2:15:53 PM		7/1/2019 2:15:55 PM	REDL_1 CCR Can not Feedback OK Signal, Check wire and Connection
Alarm REDL1_Warn	7/1/2019 2:16:02 PM			
Alarm REDL1_Warn	7/1/2019 2:16:13 PM			
Alarm REDL1_Warn	7/1/2019 2:16:46 PM			
Alarm REDL1_Warn	7/1/2019 2:16:50 PM			
Alarm REDL1_Warn	7/1/2019 2:17:00 PM			
Alarm REDL1_Warn	7/1/2019 2:17:08 PM			
Alarm REDL1_Warn	7/1/2019 2:17:56 PM			
Alarm REDL2_Warning	7/1/2019 2:29:38 PM			
Alarm PAPI03_Warning	7/1/2019 2:30:26 PM			
Alarm PAPI_21_Warning	7/1/2019 2:30:47 PM			
Alarm SB_A1_Warning	7/1/2019 2:31:01 PM			
Alarm SB_A1_Warning	7/1/2019 2:31:17 PM			
Alarm SB_A2_Warning	7/1/2019 2:31:41 PM			
Alarm SB_A2_Warning	7/1/2019 2:31:58 PM			
Alarm ApronB_TEDL_Warning	7/1/2019 2:32:09 PM			
Alarm ApronB_TEDL_Warning	7/1/2019 2:32:28 PM			
Alarm SB_A2_Warning	7/1/2019 2:32:50 PM			
Alarm SB_A1_Warning	7/1/2019 2:32:53 PM			
Alarm PAPI_21_Warning	7/1/2019 2:32:56 PM			
Alarm REDL2_Warning	7/1/2019 2:32:59 PM			
Alarm PAPI_21_Warning	7/1/2019 2:34:17 PM			
Alarm REDL1_Warn	7/1/2019 2:36:16 PM			
Alarm SB_A1_Warning	7/1/2019 2:36:16 PM		7/1/2019 2:38:23 PM	SB A1 CCR Can not Feedback OK Signal, Check Wire and Connection
Alarm PAPI_21_Warning	7/1/2019 2:36:16 PM		7/1/2019 2:38:23 PM	PAPI 21 CCR Can not Feedback OK Signal, Check Wire and Connection
Alarm PAPI03_Warning	7/1/2019 2:36:16 PM		7/1/2019 2:36:43 PM	PAPI 03 CCR Can not Feedback OK Signal, Check Wire and Connection

Can Check Alarm signal

Daily

Weekly

Monthly

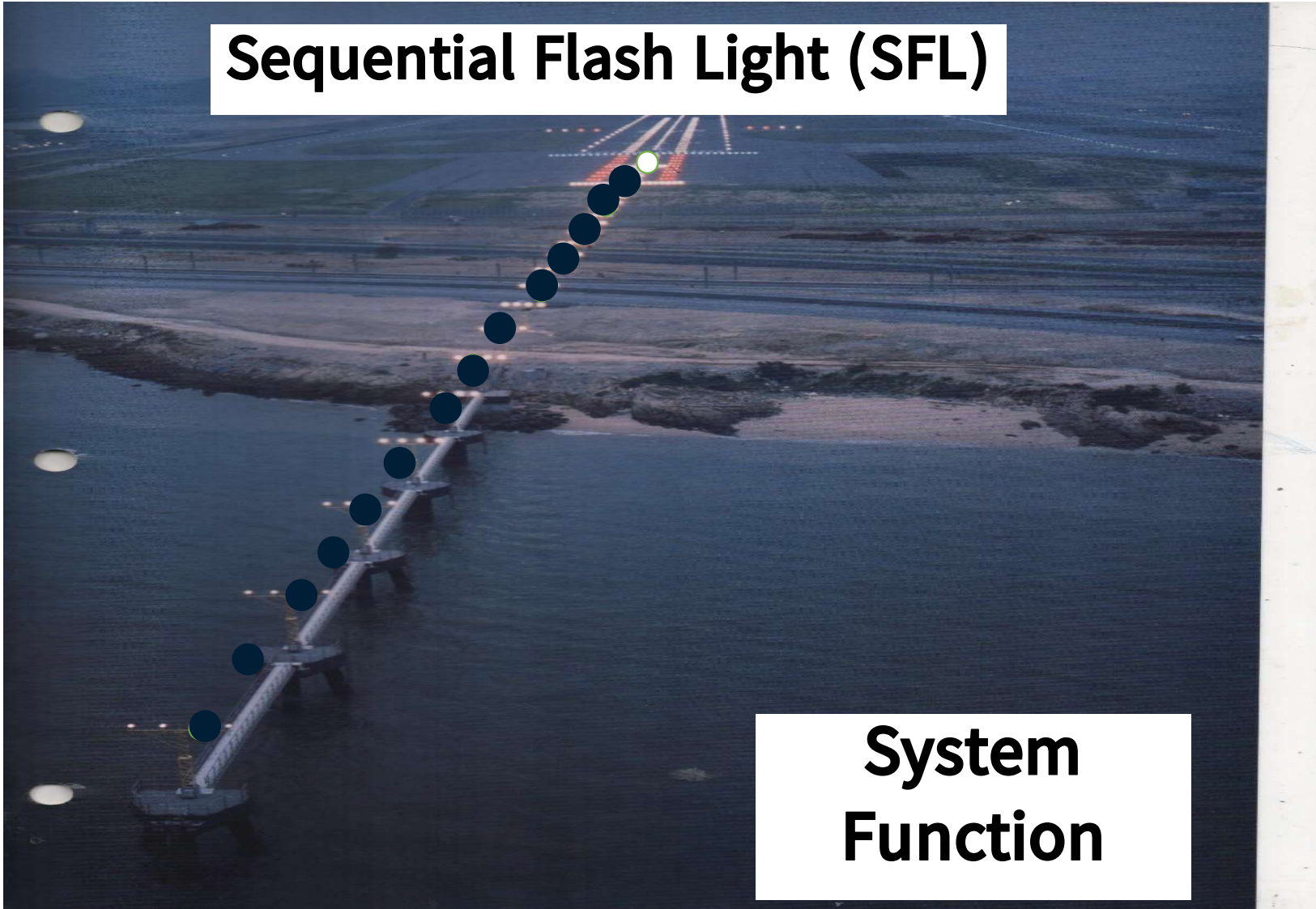




Already installed and operation

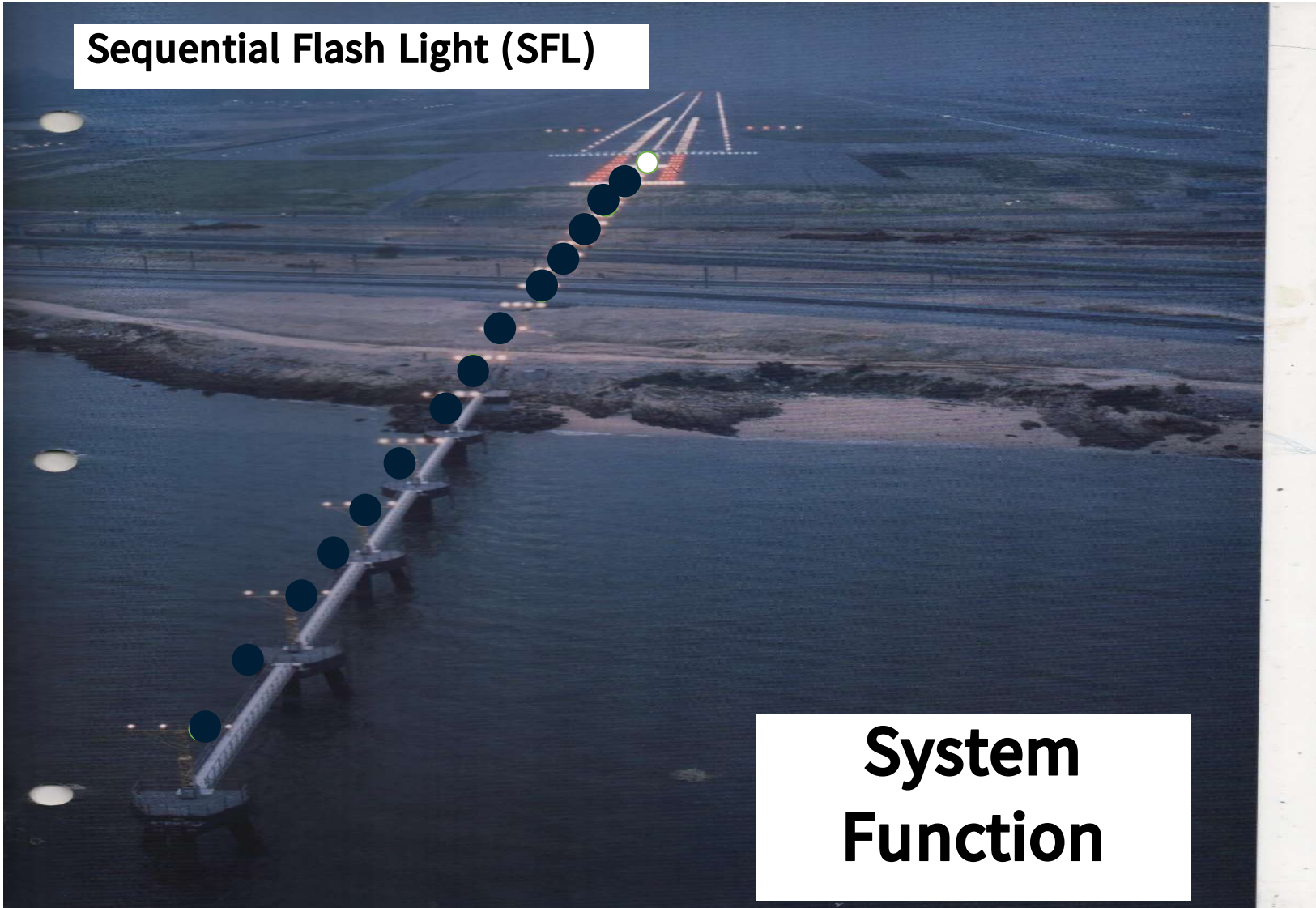
**Computerized operation control  
is more reliable than manual  
control**

# Sequential Flash Light (SFL)



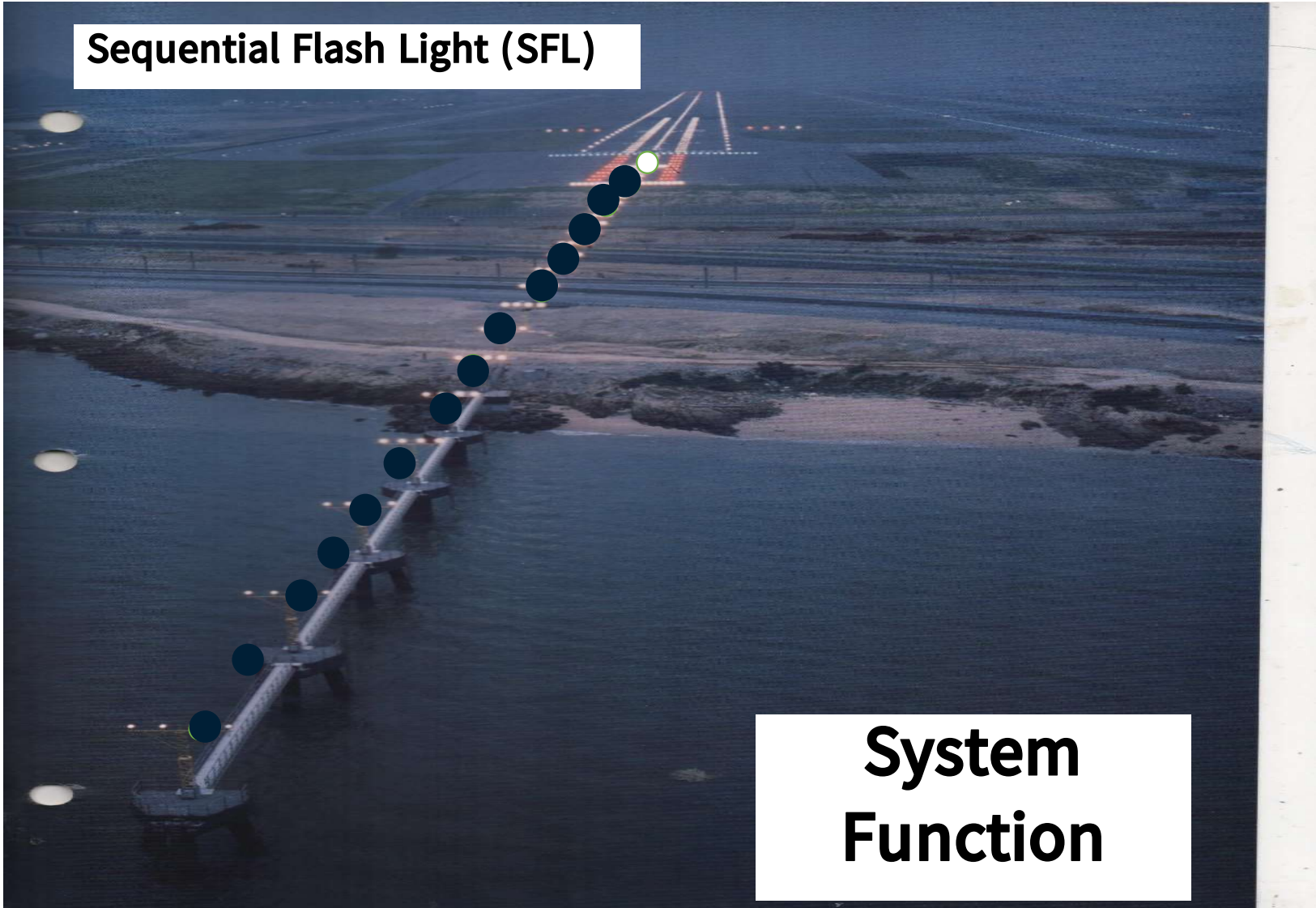
**System  
Function**

## Sequential Flash Light (SFL)



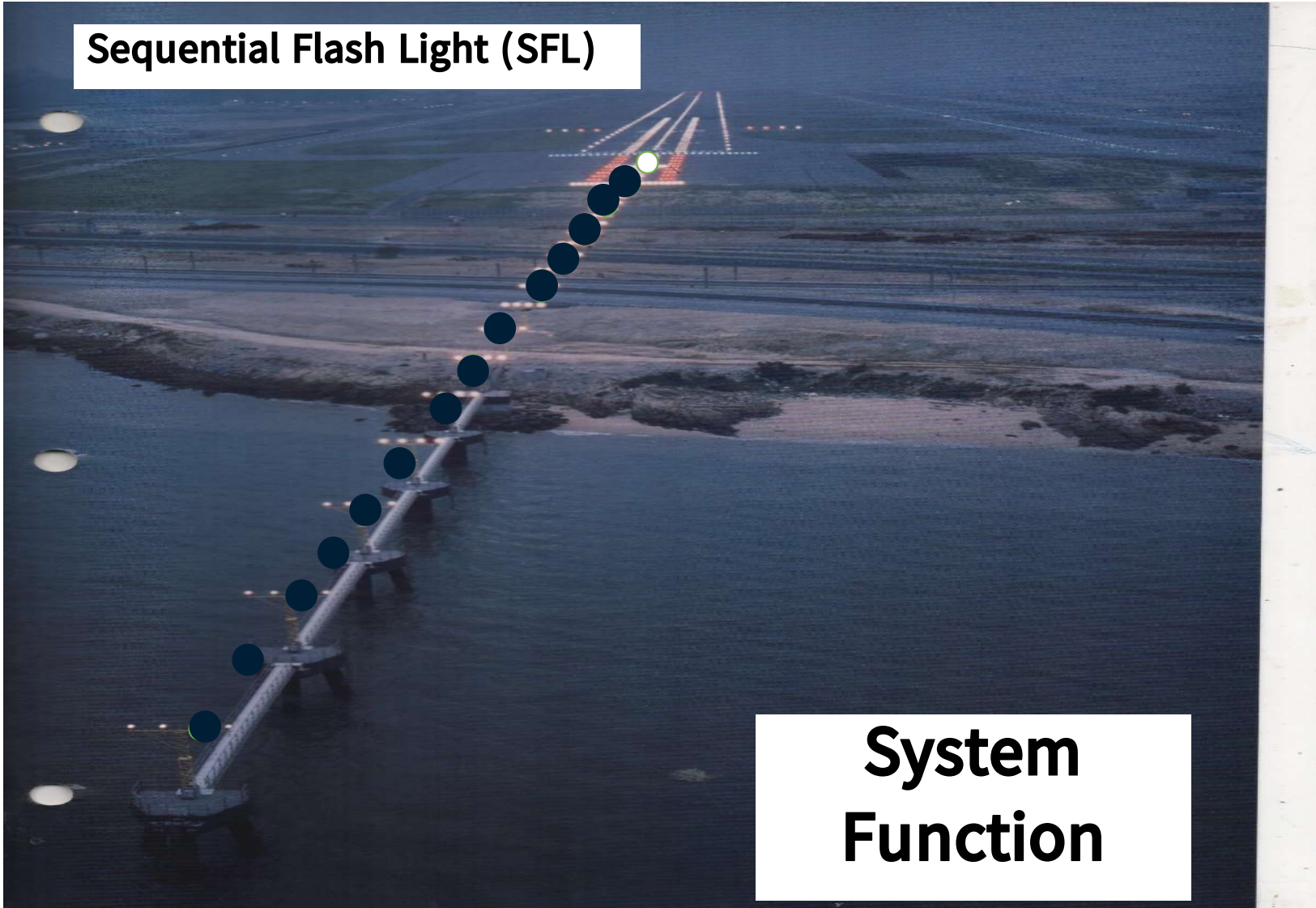
**System  
Function**

## Sequential Flash Light (SFL)



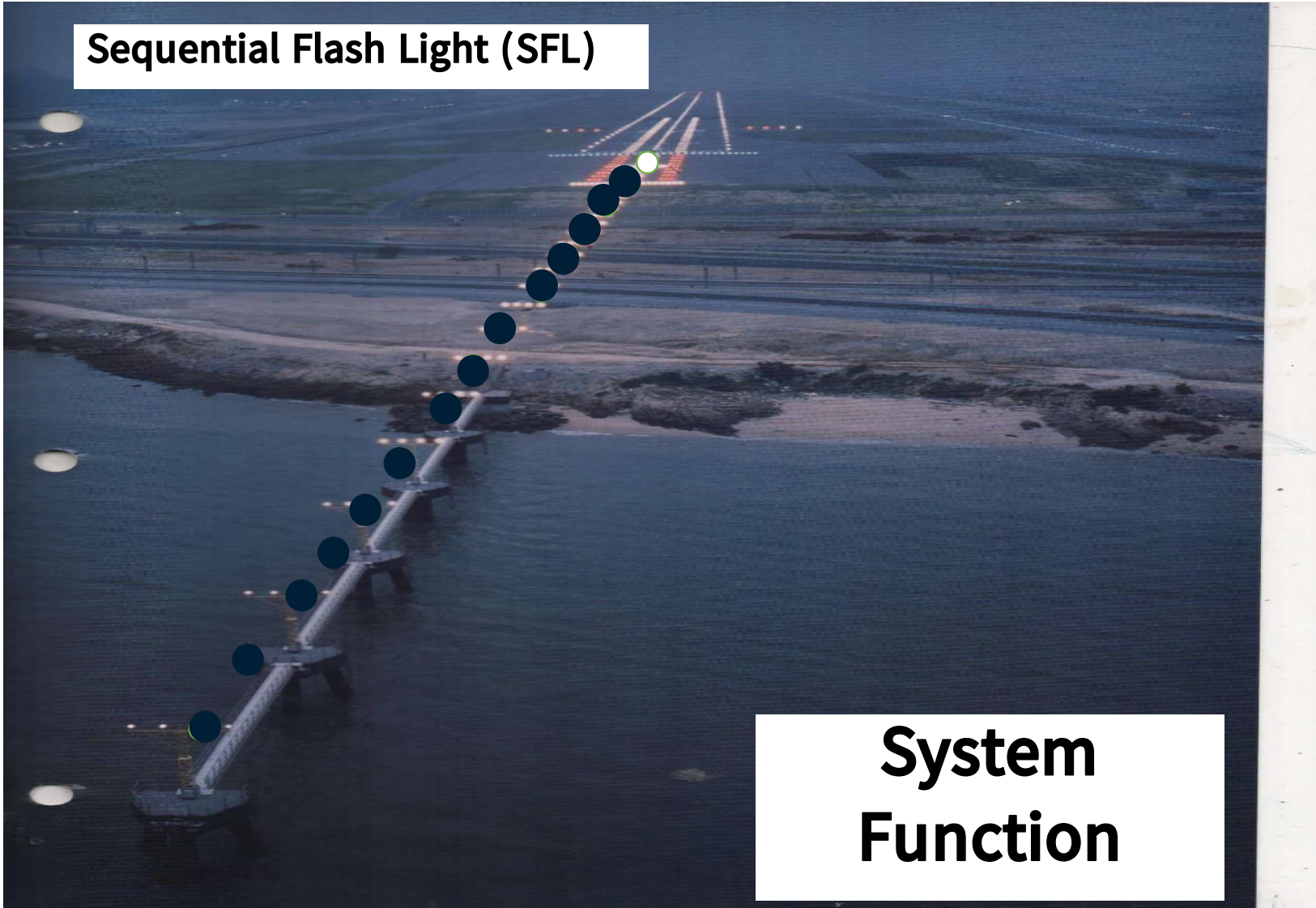
**System  
Function**

## Sequential Flash Light (SFL)



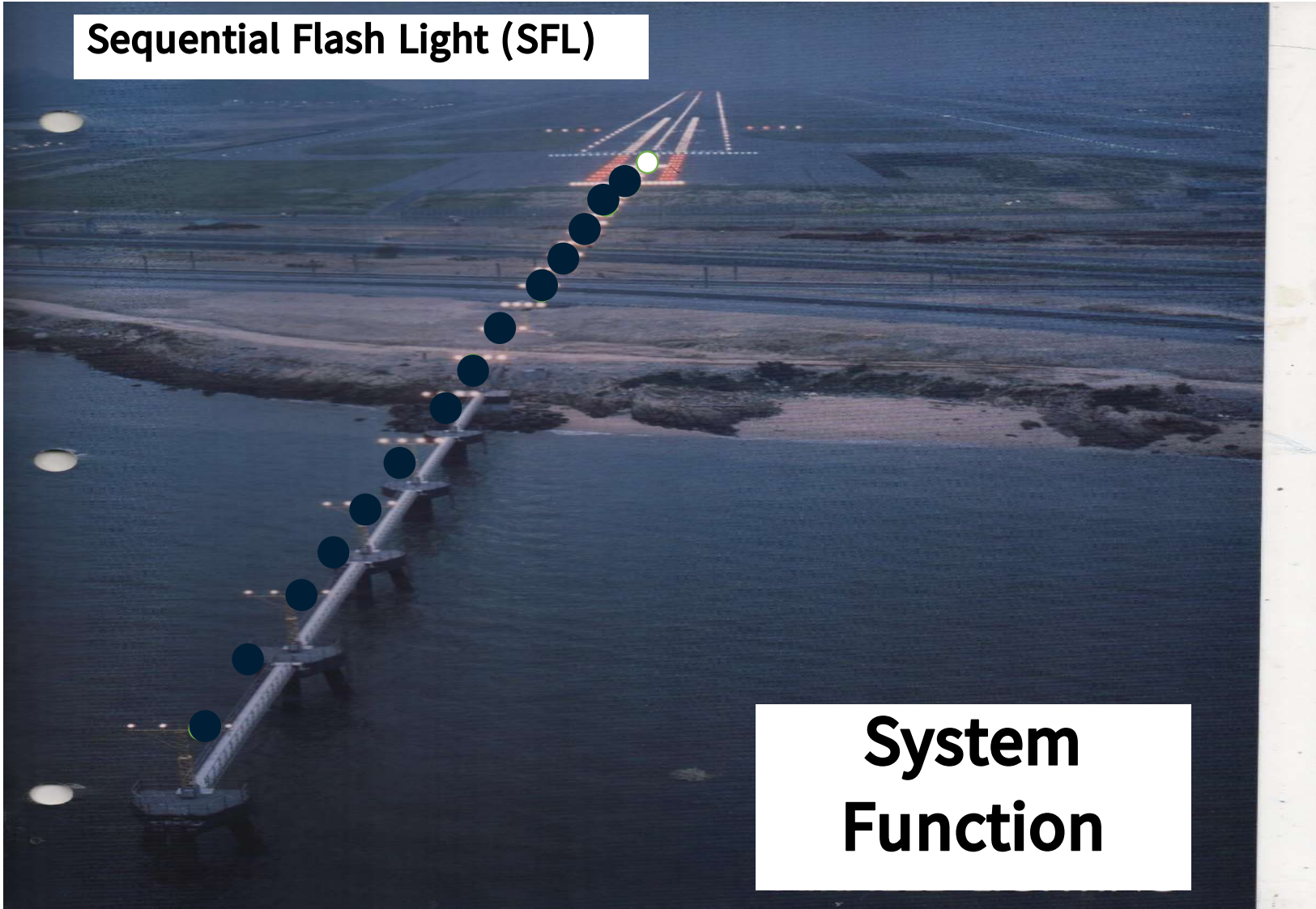
**System  
Function**

## Sequential Flash Light (SFL)



**System  
Function**

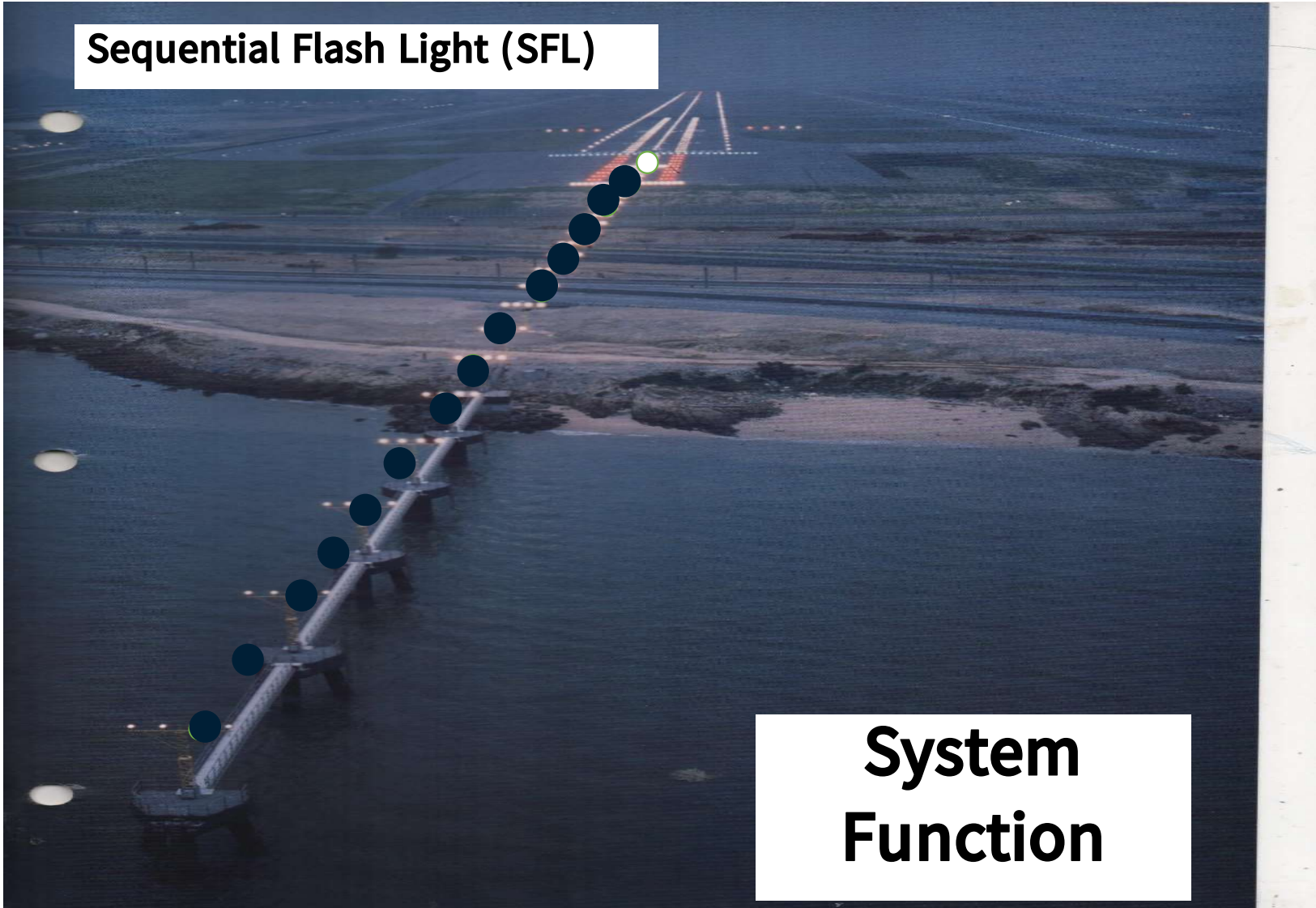
## Sequential Flash Light (SFL)



**System  
Function**

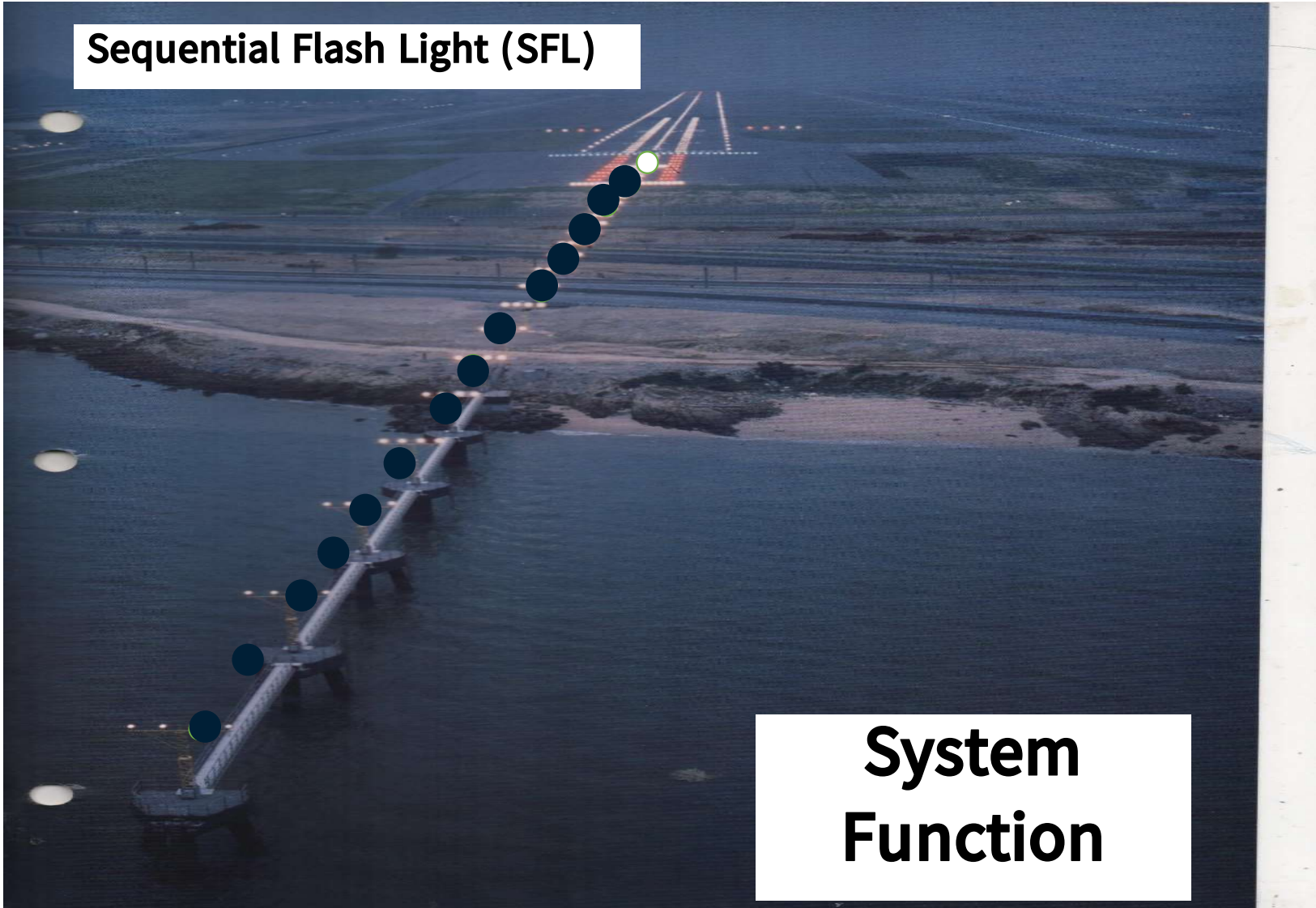


## Sequential Flash Light (SFL)



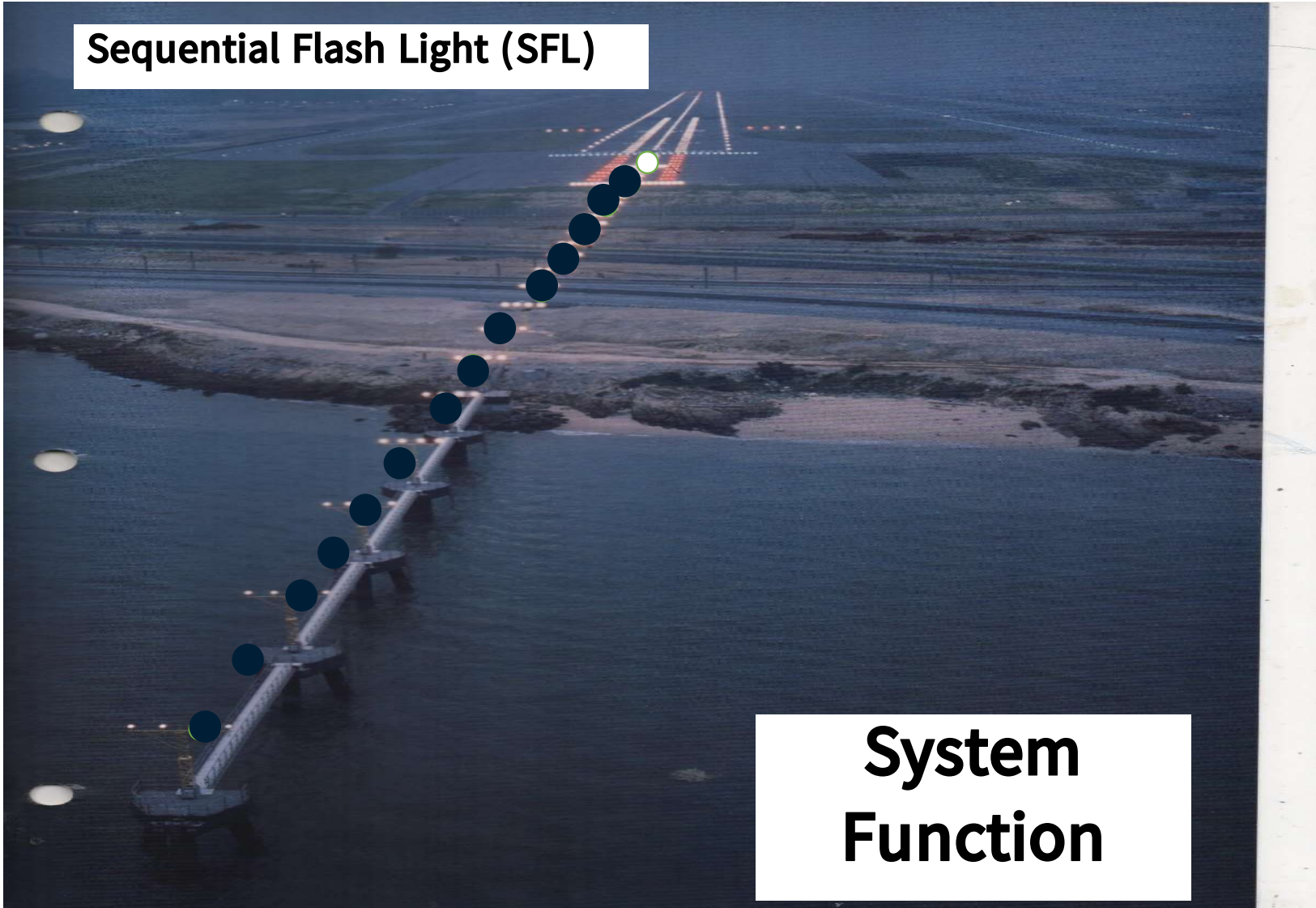
**System  
Function**

## Sequential Flash Light (SFL)



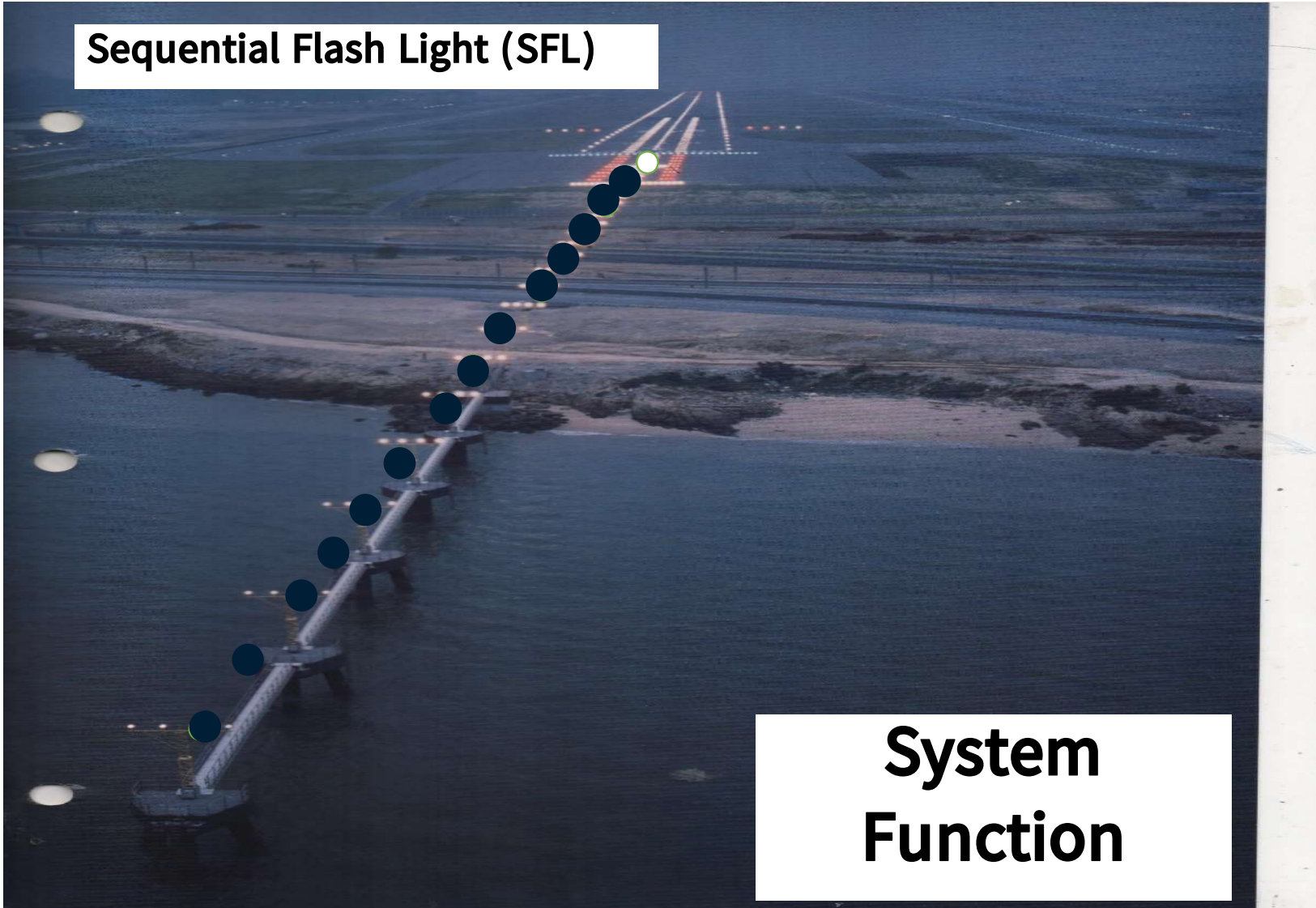
**System  
Function**

## Sequential Flash Light (SFL)



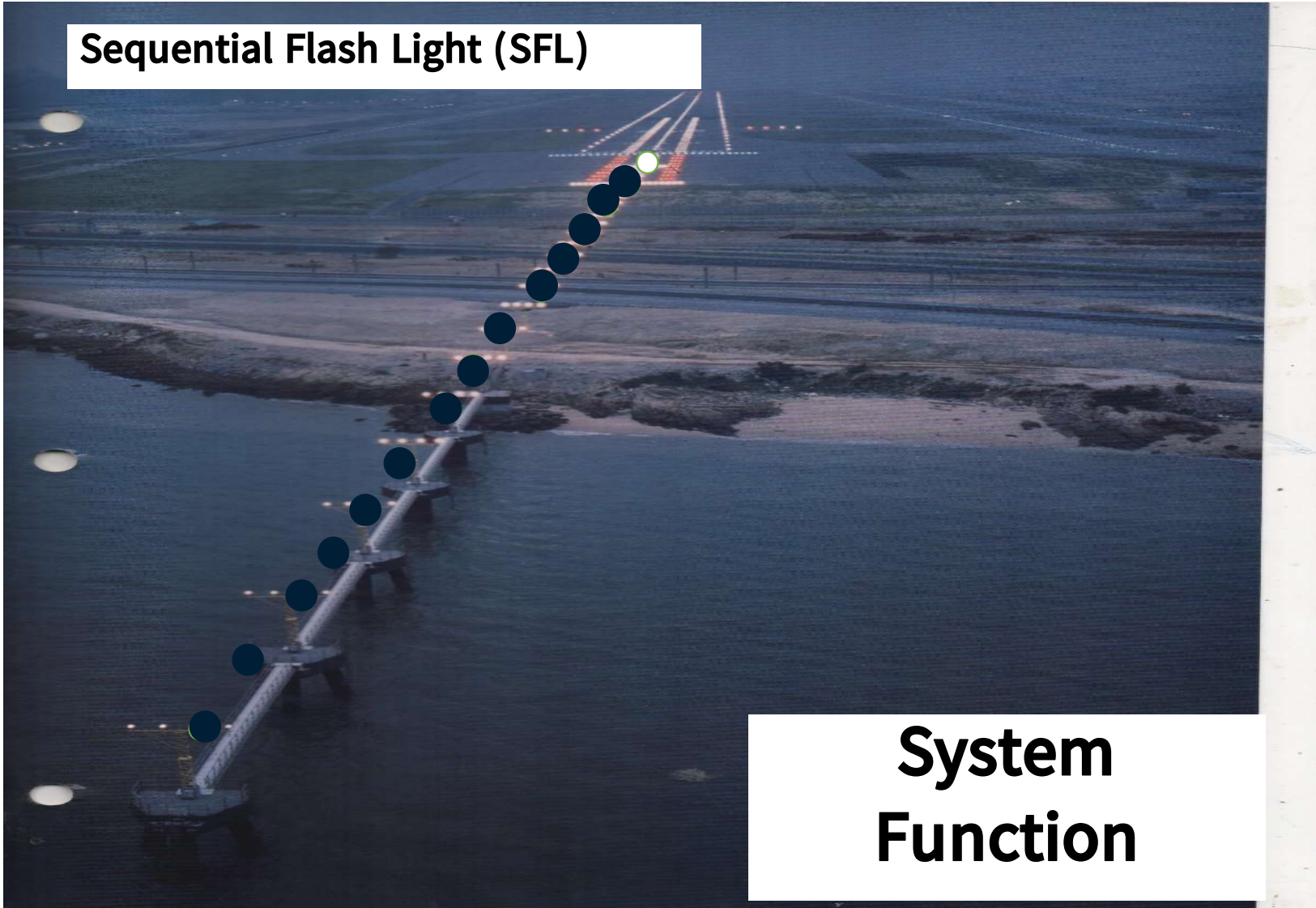
**System  
Function**

## Sequential Flash Light (SFL)



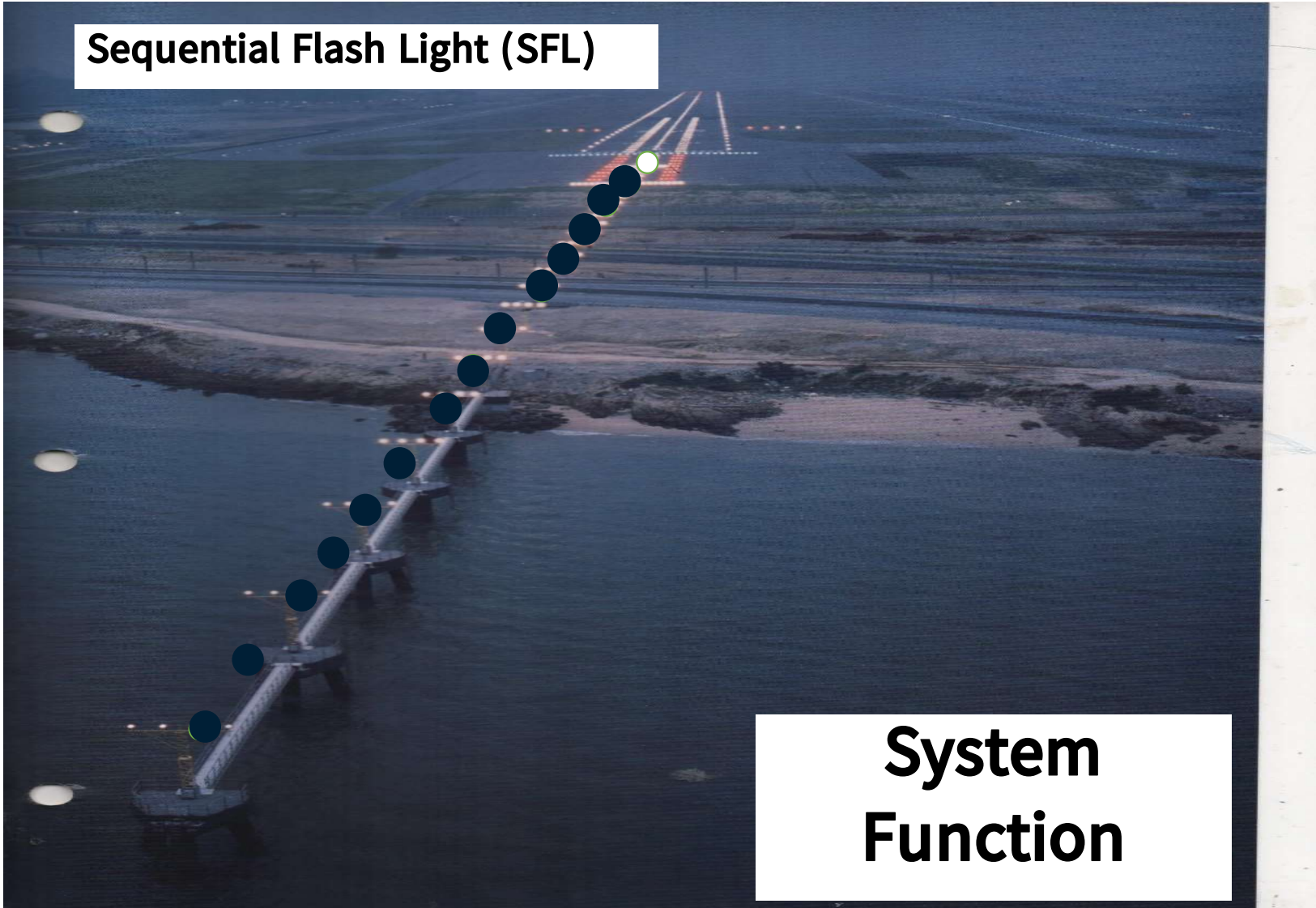
**System  
Function**

## Sequential Flash Light (SFL)



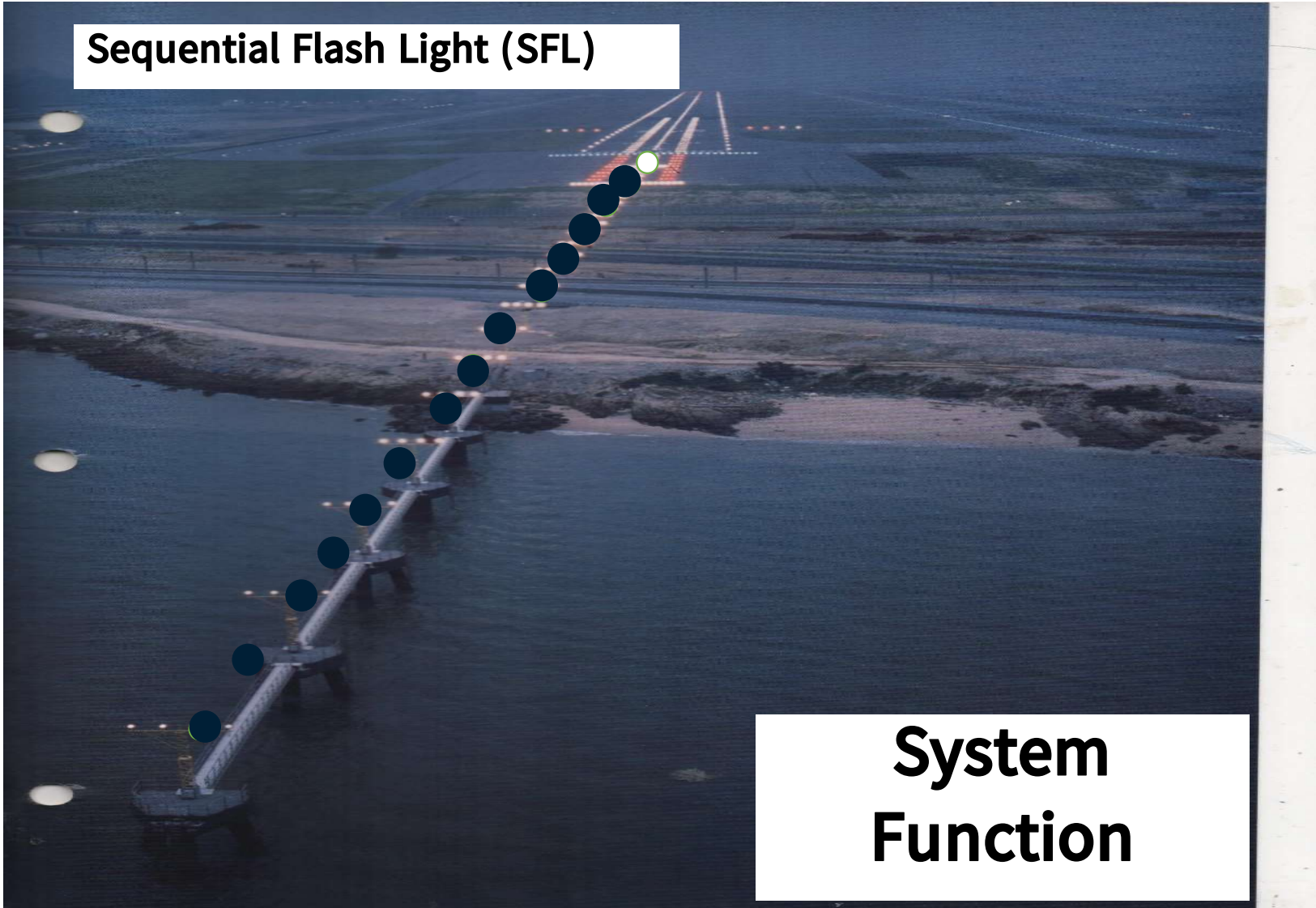
**System  
Function**

## Sequential Flash Light (SFL)



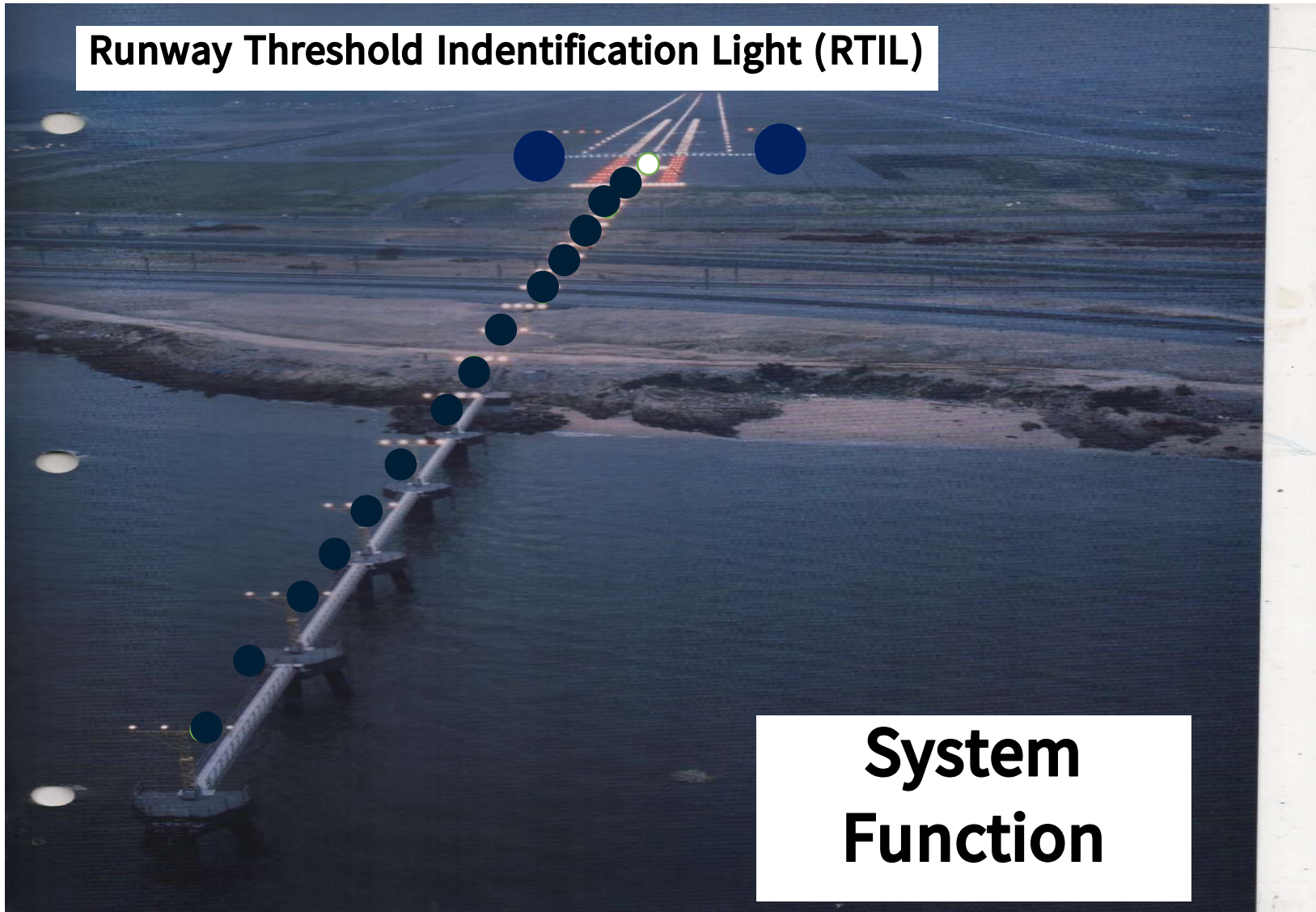
**System  
Function**

## Sequential Flash Light (SFL)



**System  
Function**

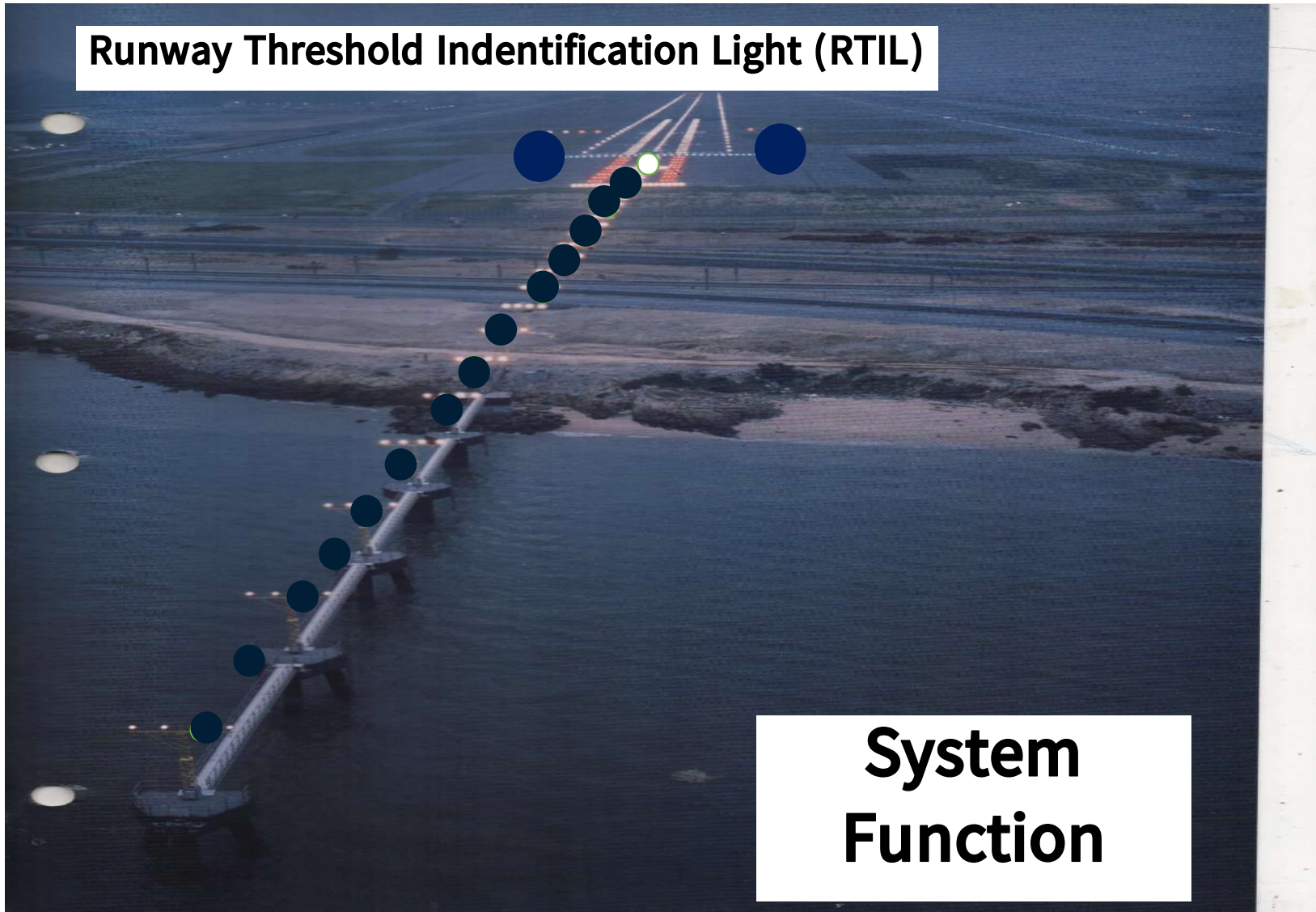
## Runway Threshold Identification Light (RTIL)



**System  
Function**

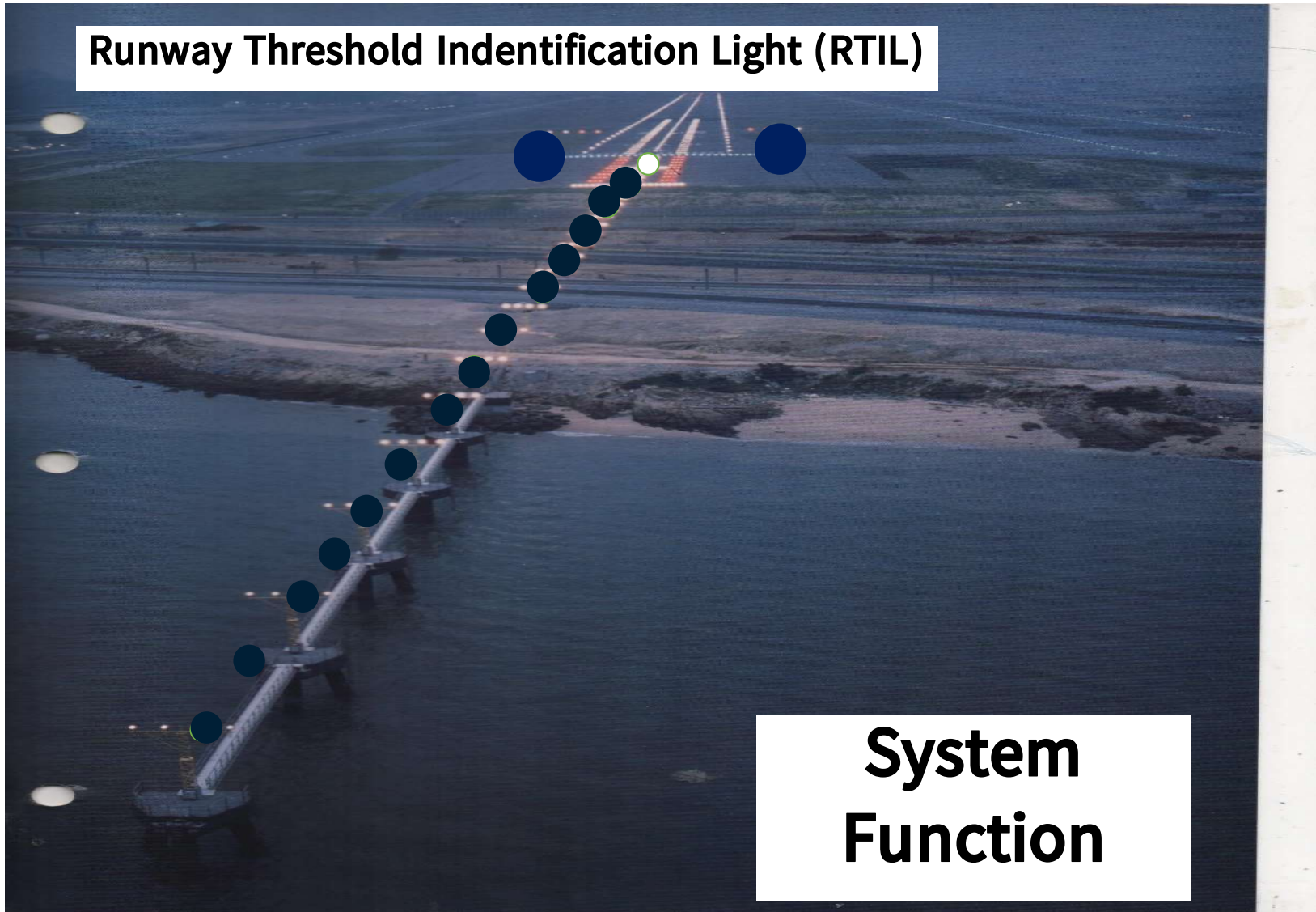


## Runway Threshold Identification Light (RTIL)



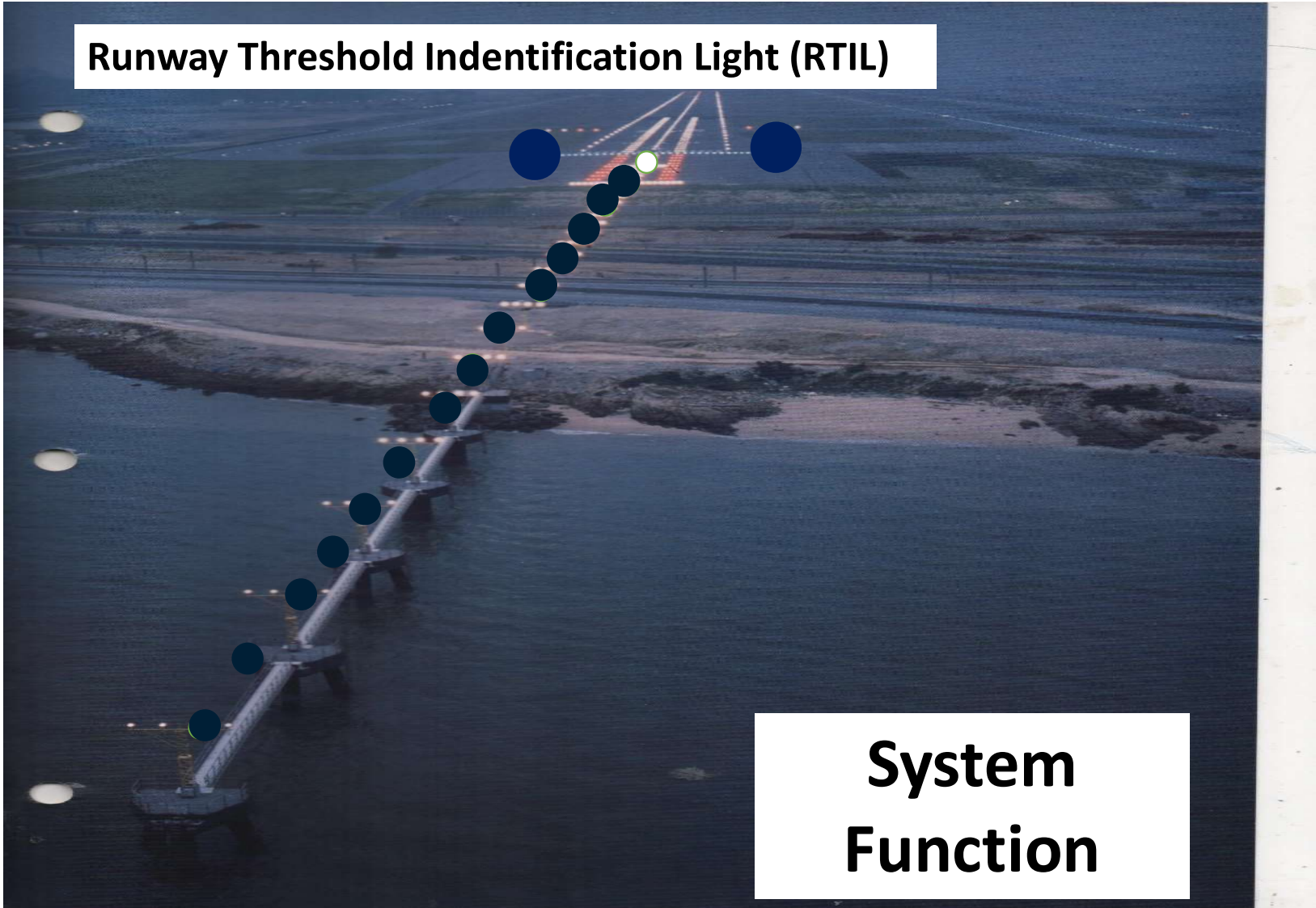
**System  
Function**

## Runway Threshold Identification Light (RTIL)



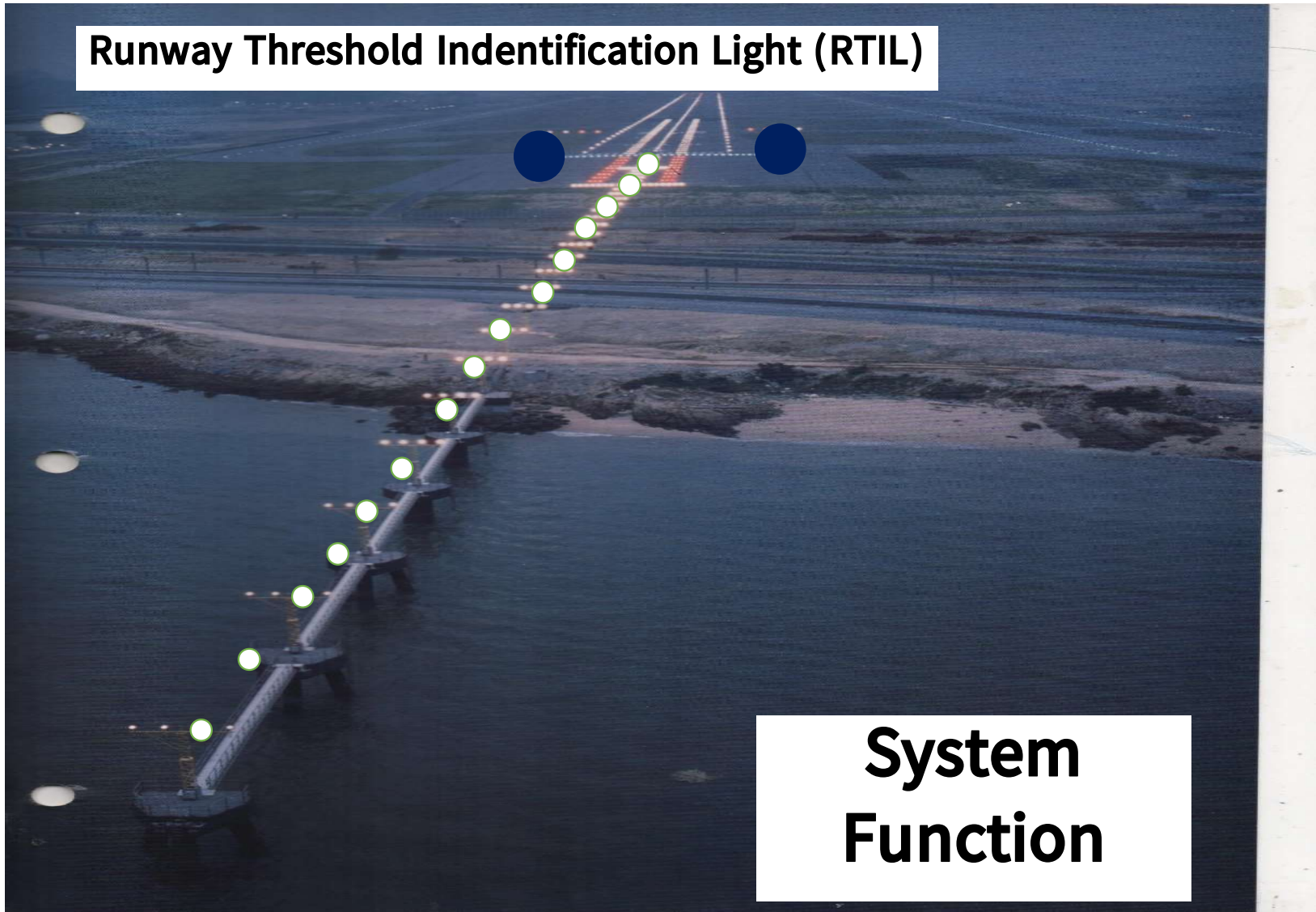
**System  
Function**

**Runway Threshold Identification Light (RTIL)**



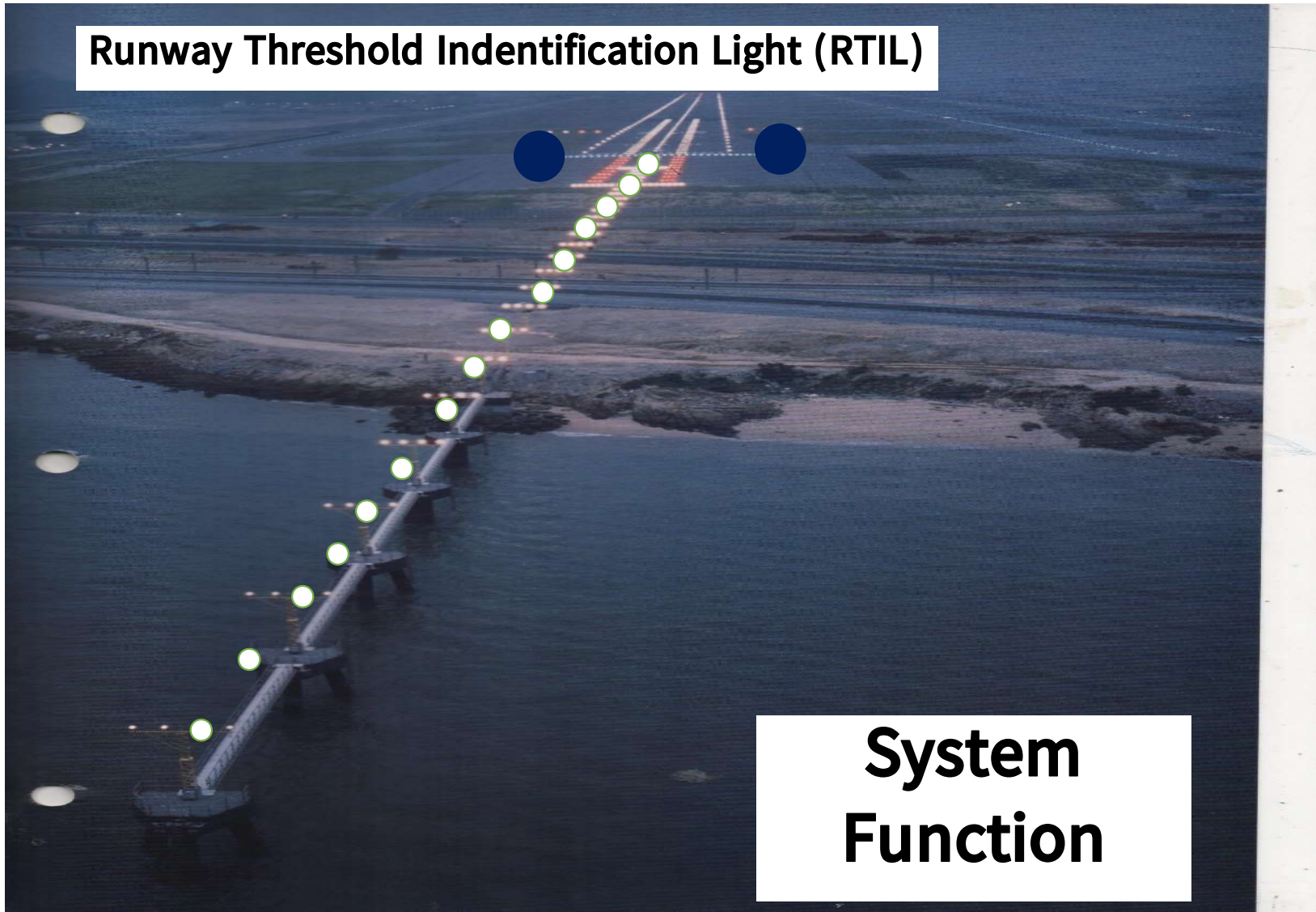
**System  
Function**

## Runway Threshold Identification Light (RTIL)



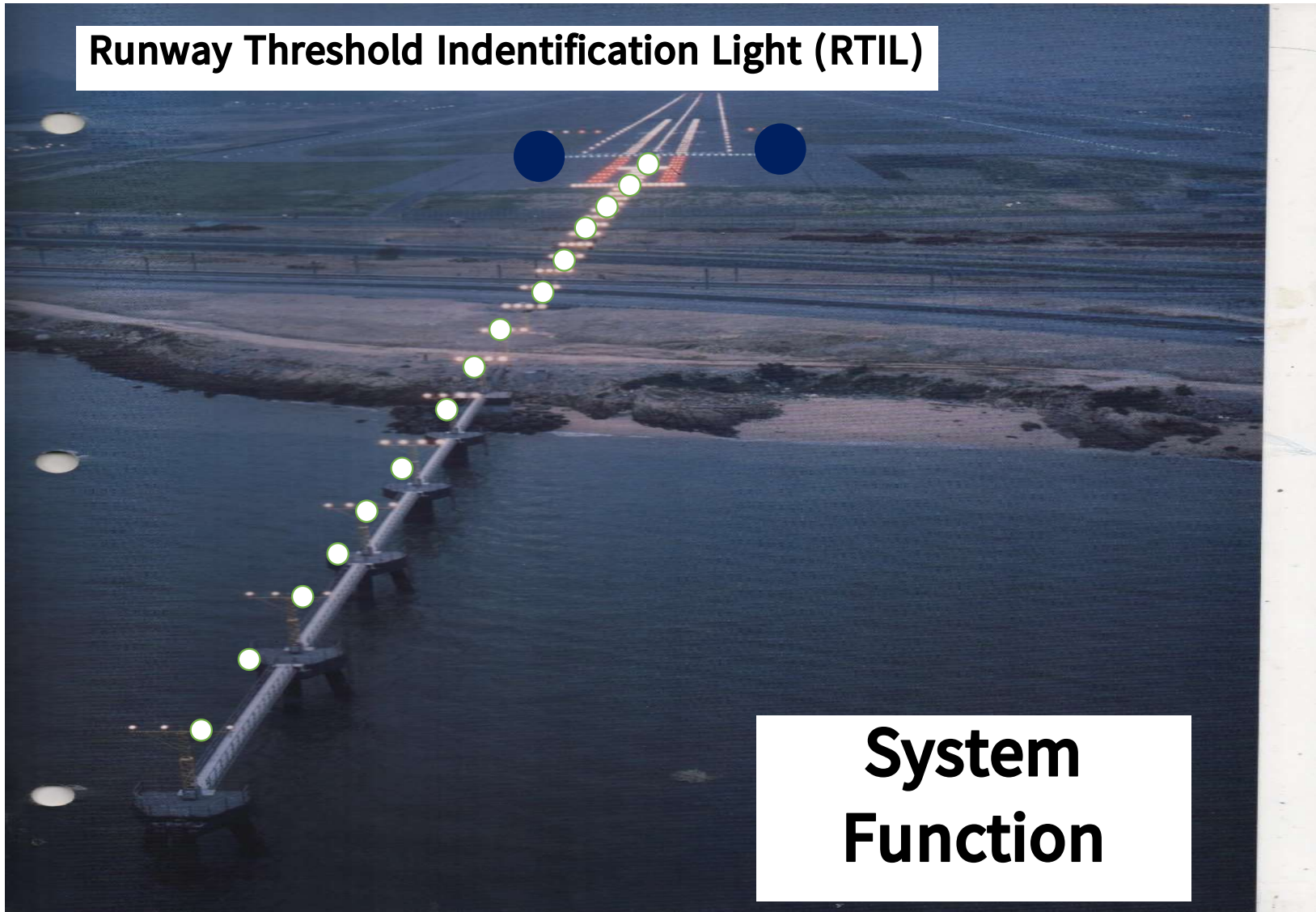
**System  
Function**

## Runway Threshold Identification Light (RTIL)



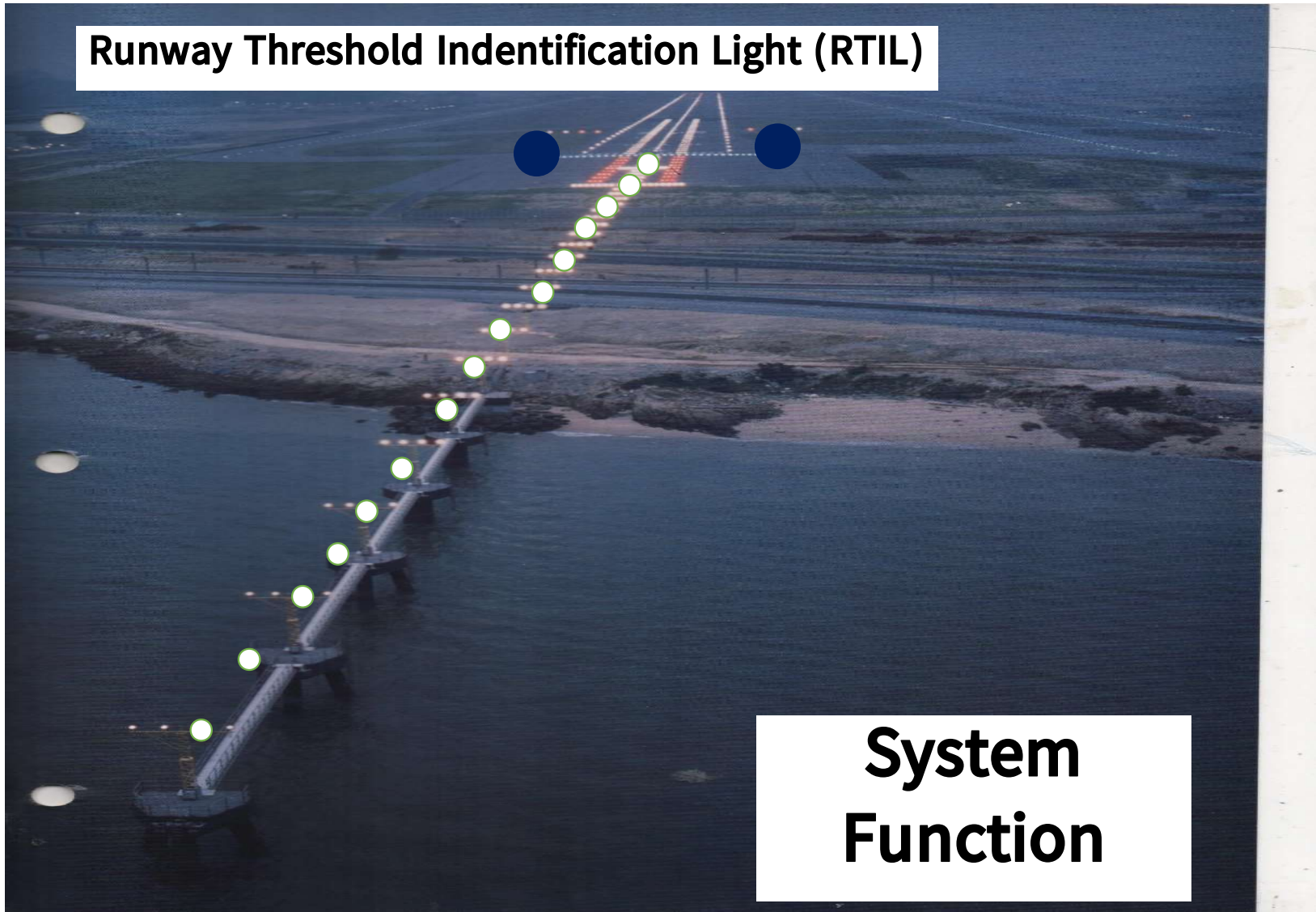
**System  
Function**

## Runway Threshold Identification Light (RTIL)

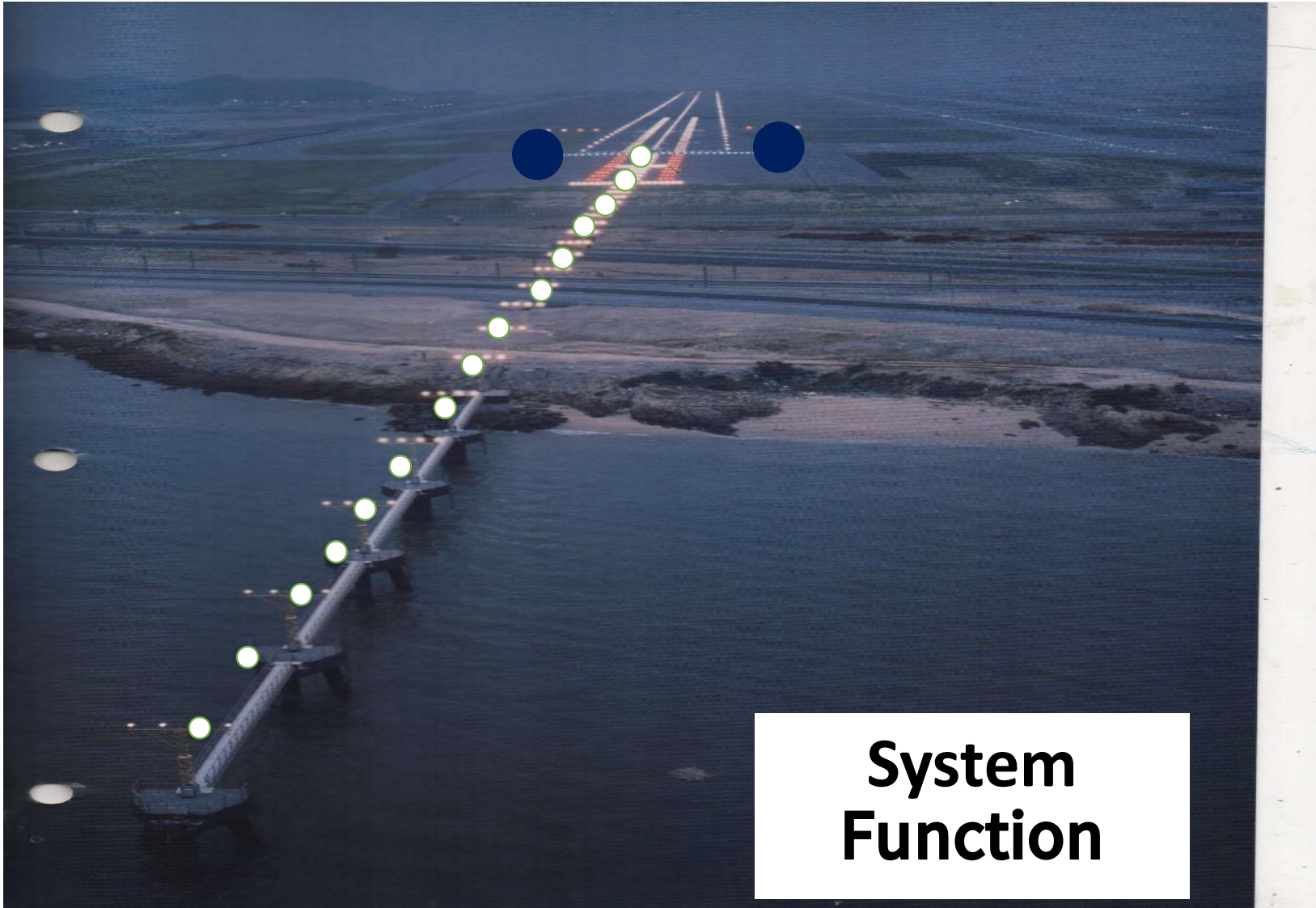


**System  
Function**

## Runway Threshold Identification Light (RTIL)



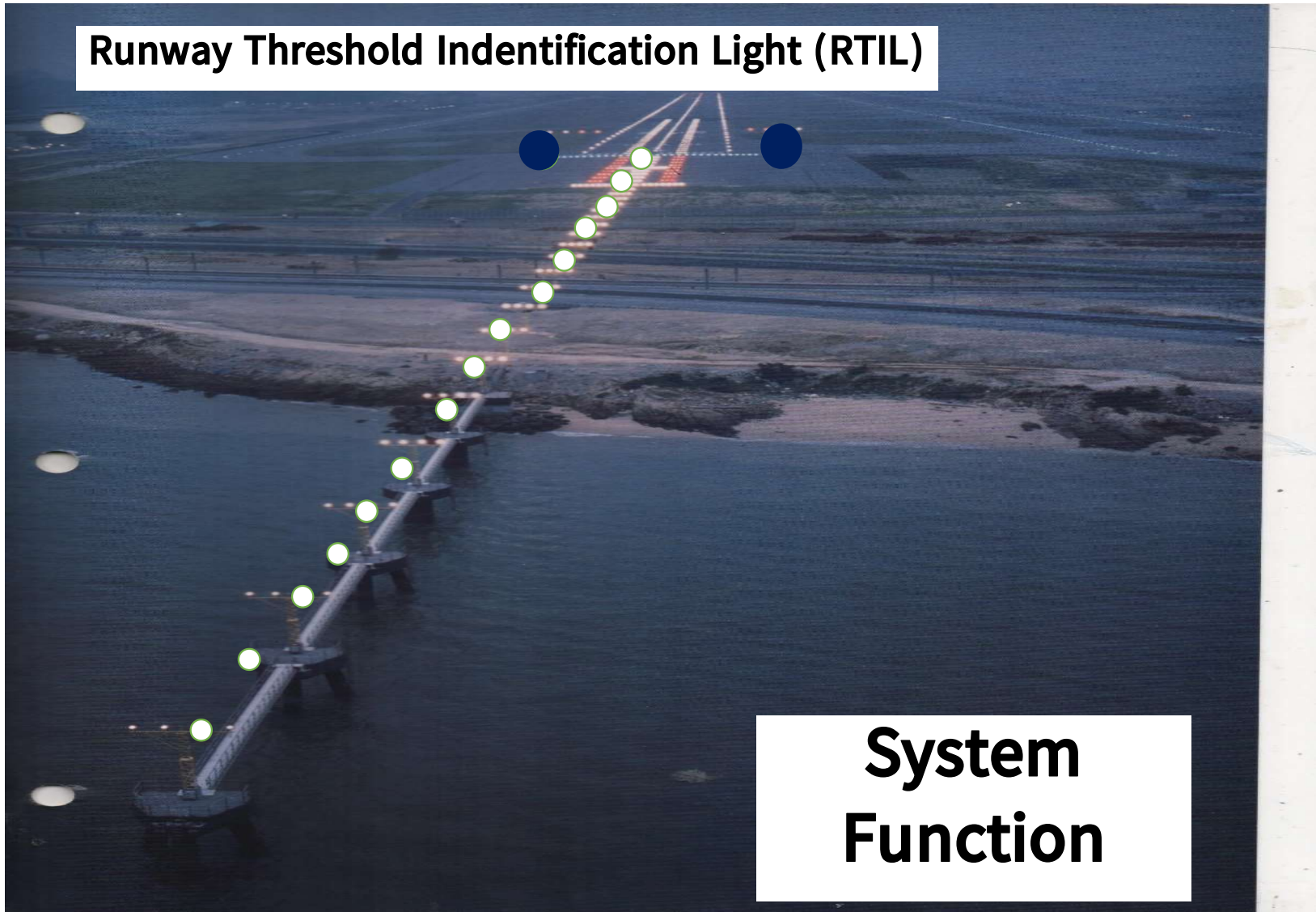
**System  
Function**



**System  
Function**

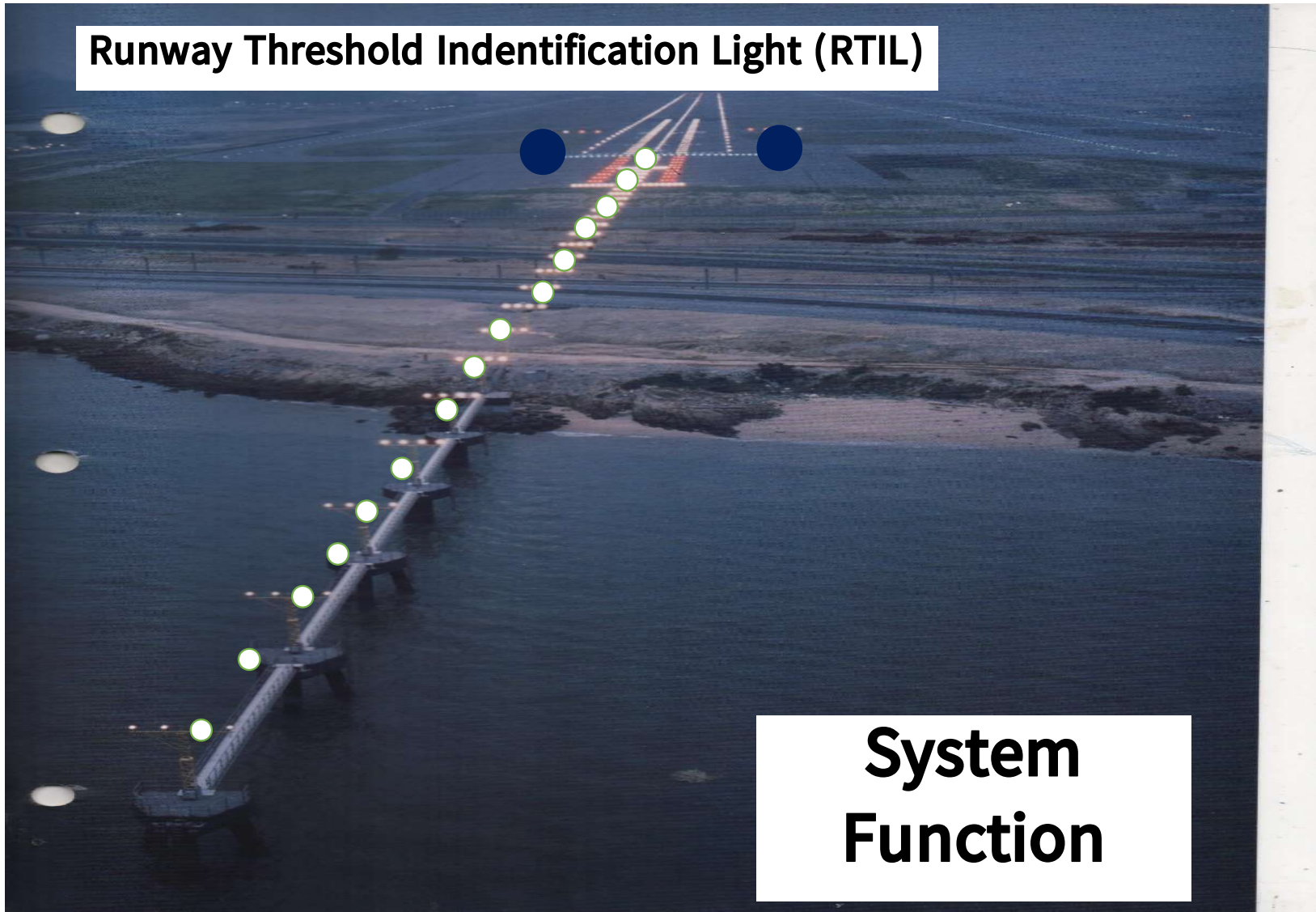


## Runway Threshold Identification Light (RTIL)



**System  
Function**

## Runway Threshold Identification Light (RTIL)

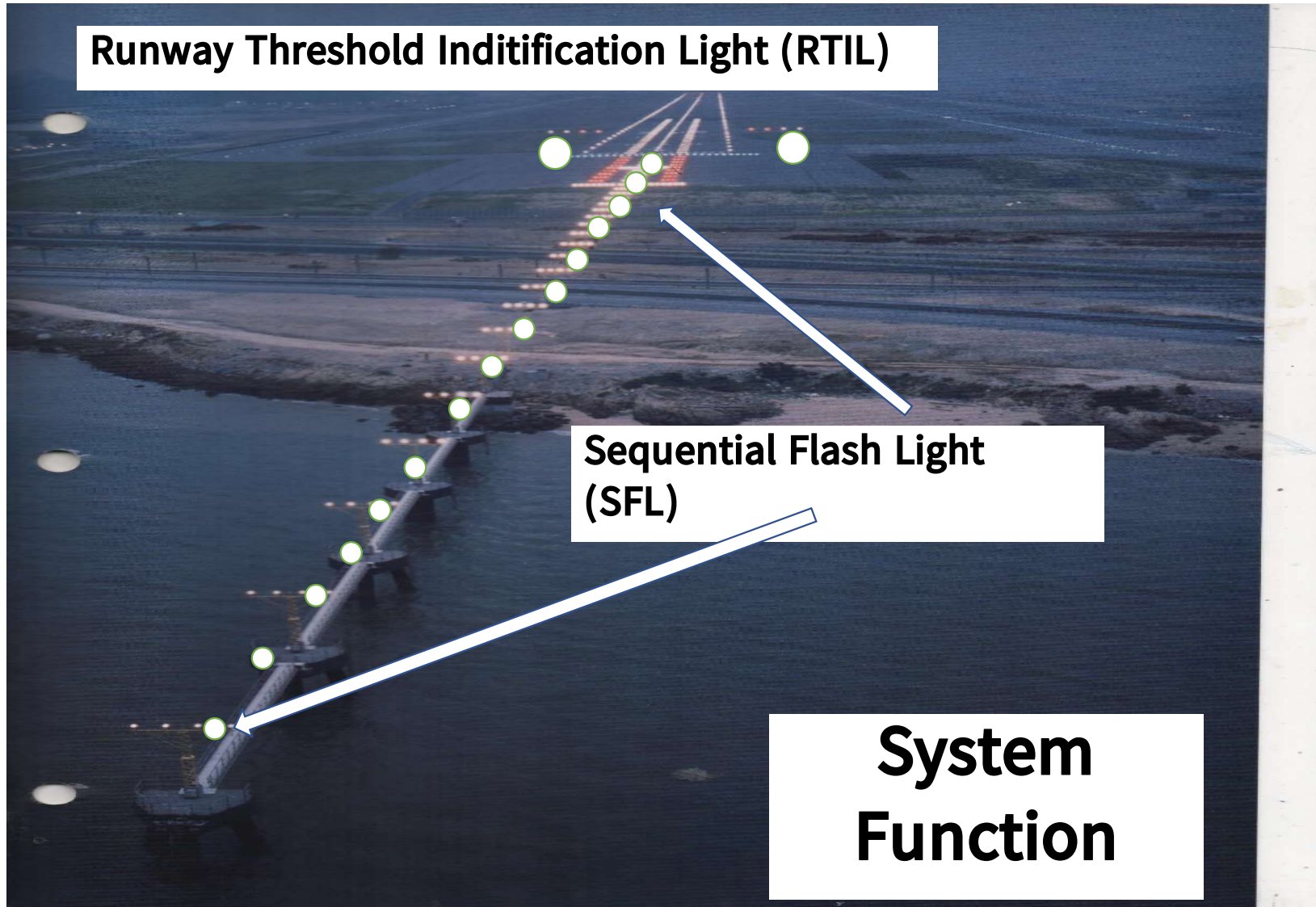


**System  
Function**

**Runway Threshold Identification Light (RTIL)**

**Sequential Flash Light  
(SFL)**

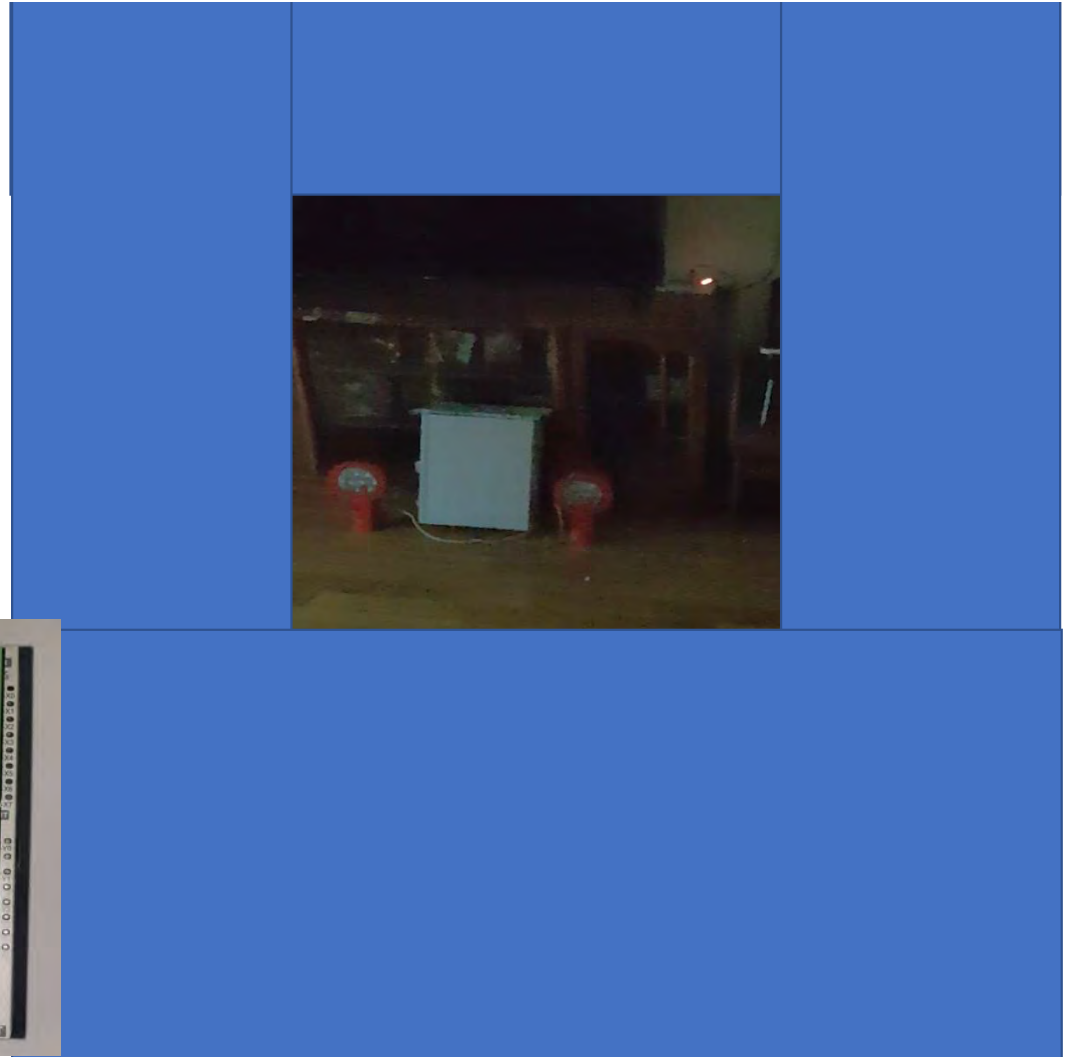
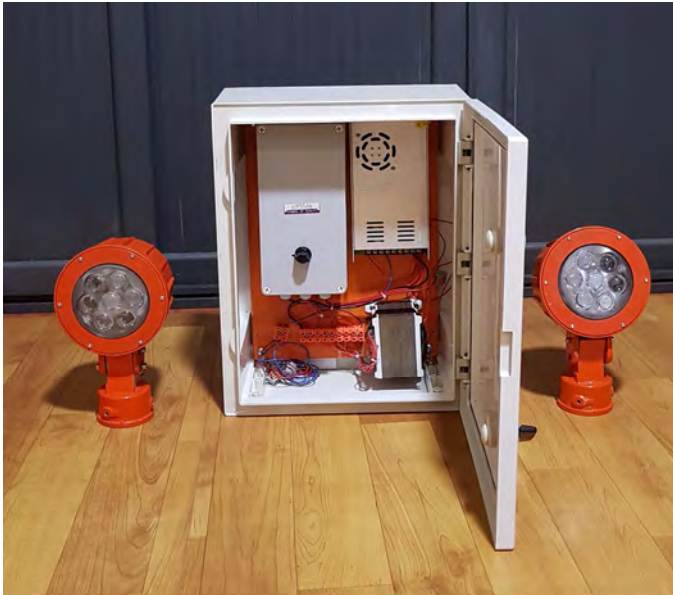
**System  
Function**



## Testing of Sequential Flash Light Before Installation

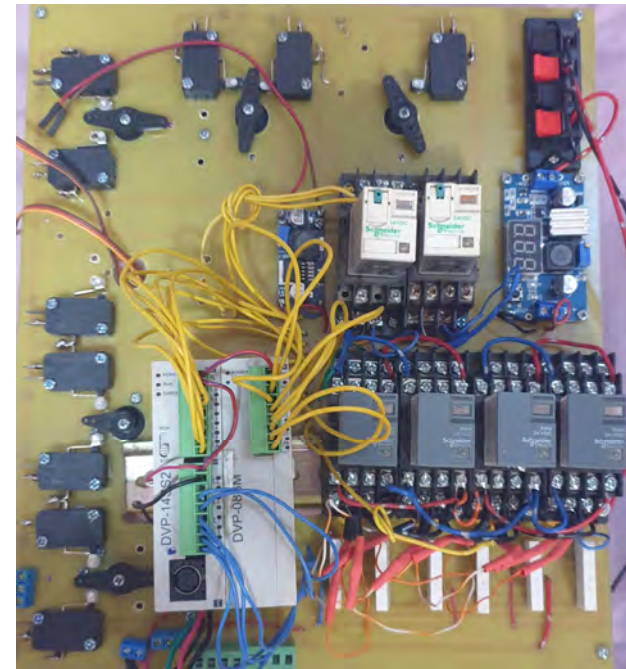
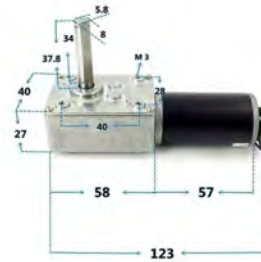


# Testing of RTIL after created



Creation during Covid-19

# Remote Control Drive Cart



အသုံးပြုတပ်ဆင်ပစ္စည်းများ

# Remote Control Drive Chair





# Socket Tester



# Solar system staircase 12V DC lighting System (Multiway Switching)



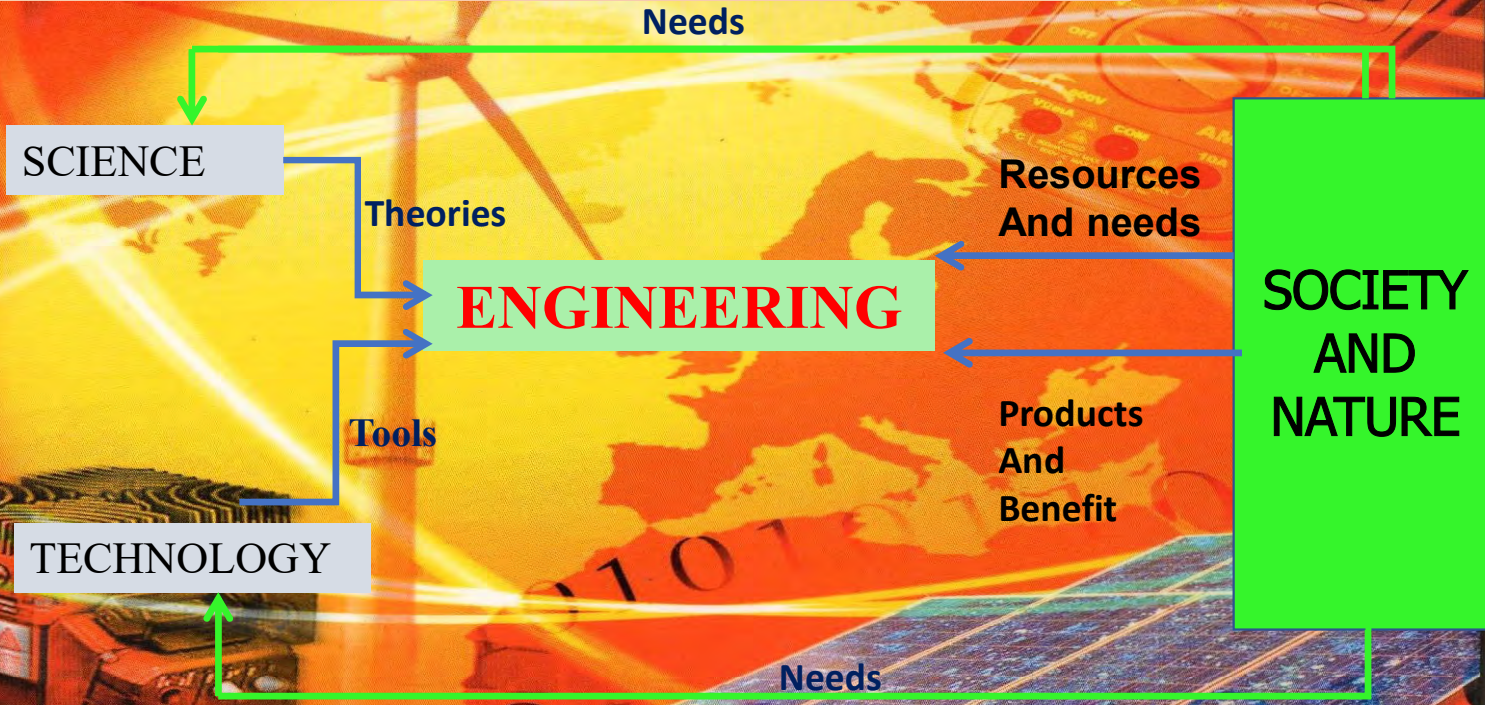
**Our Brain will Bright for  
Creation**

**Our Brain will Bright for  
Country**

# Conclusion

## CONTEXT OF ENGINEERING PRACTICE

Engineering – Integration & Innovation For Society



## **Chinese Philosopher Xunzi**



**I hear and I forget,  
I see and I remember,  
I do and I understand.**

**Tell me, I forget.  
Show me, I remember.  
Involve me, I understand.**

**Q & A**

Thank You