

“A History of Progress in AFL Technology”

HISTORY OF THE AVIATION LIGHTING COMMITTEE OF THE ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA

On October 21, 1929, a letter was written to the Assistant Secretary for Aeronautics by F.C. Hingsburg, Chief Engineer of the Airways Division of the Department of Commerce, in which he announced that at first meeting of the Aviation Lighting Committee of the Illuminating Engineering Society had been held on October 17th.

The committee was made up of selected engineers interested in the development aviation lighting and air navigation facilities. There had evidently been considerable preparation work before the meeting was held, because it was able to organize itself into ten sub-committees as follows:

- No. 1: Mr. S.C. Eibben headed the committee to try to standardize airplane lighting; so those replacements could be obtained when aircrafts were outside of their home area. He was from the Westinghouse Lamp Company at Bloomfield, New Jersey.
- No. 2: This sub-committee was to concern itself with Airways, which at that time were lighted pathways across the country. D.C. Young of the National Lamp Works at Nela Park, Cleveland, Ohio, was put in charge of the Group. Mr. D.C. Young became the secretary of the Lighting Committee and held the position for a number of years.
- No. 3: This group was to study and make recommendations on color standards for airways and airports. Dr. Gage of Corning Glass works headed this project.
- No. 4: This group was to concern itself with the airways and beacons and also arrange for research on intensities, colors, duration of flashes, etc. This work was put in charge of L.C. Porter of Edison Lamp Works of General Electric Company at Harrison, NJ.
- No. 5: This group was assigned the problem of distinguishing between airport lights and advertising lighting and was to explore the problem as seen by such organizations as the Pilots Association, the American Air Transport Association and others. The project was headed by T.E. Faulke of the Cooper Hewitt Electric Company, Hoboken, NJ.
- No. 6: This group was to study and adapt a uniform system of measurements and determination of proper spacing of lights to give equivalent lighting of beacons in different areas of the country. Academia, in which the person of S.K. Barrett of New York University, University Heights, New York City, was made responsible for this program.
- No. 7: This group covered the subject of airport lighting. No single person was assigned to this matter. It was considered to be a matter that all of the committee should be involved in.
- No. 8: This group was to study and make recommendations concerning the uniform marking of electric and telephone transmission lines including river crossings and mountainous areas. This project was assigned to H.E. Mehan of the GE Company at Schenectady, NY.

No. 9: This group was to study and make recommendations on the making of radio towers.
Mr. H.E. Mehan at Schenectady was given this additional project.

No. 10: This group was to concern itself with the study of mists and fog regard to the transmission of different kinds of colors of light. Mr. P.R. Bassett of the Sperry Gyroscope Company, Manhattan Bridge Plaza, Brooklyn, NY and Mr. T.A. Foulke were jointly put in charge of this matter.

It must be understood that these men were not working entirely in a vacuum. The Department of Commerce had an Assistant Secretary for Aeronautics and an Airway Division; it had also issued a number of bulletins on various phases of these problems. The Sub Committees were enjoined to review these bulletins. Another common instruction was to prepare papers for the Illuminating Engineering Society. This last is still a common request to our membership.

It will be of interest that this first meeting was held at the General Lighthouse Depot in Staten Island, New York. Mr. F.C. Hingsburg, who was the moving spirit in the establishment of the Aviation Lighting Committee, was chief engineer of the Airways Division which was part of the Bureau of Lighthouses of the Department of Commerce.

On May 19, 1930, Hingsburg presented to his superiors the new designs for improved 36 and 40 inch beacons which was to replace the standard 24 inch then in use.

The second meeting of the committee was held in New York at the headquarters of the Illuminating Engineering Society on June 24, 1930. Hingsburg chaired the meeting and Young was secretary.

Other members present were F.R. Bassett, Leo Beck, F.C. Breckenridge, R.W. Cost, H.P. Gage, Ward Harrison and H.E. Mahan.

This meeting considered a report by Mr. A. Douglas Cook on an Aviation Lighting meeting held in Berlin in April 26-30, 1930. The upshot was that it was determined to comment on the European suggestions by making a statement of current practice in the US. Hingsburg was to draft the statement. On July 8, 1930, he sent the members of the Aviation Lighting Committee a 16-page Summary of the current American Airways Practice. This describes the 30,000 miles of airways then being established in the United States of which 12,000 miles were set for night flying. Miles flown on fixed schedules aggregate more than 94,600 miles each 24 hours of which 24,000 are flown at night. The air navigation facilities included auxiliary landing fields every thirty miles, lights, periodic collection and dissemination of weather reports with radio transmission to pilots in flight, and a position reporting system for keeping track of planes flying the airways. This meeting was held at the I.E.S. headquarters in New York on December 19, 1930. The sub-committee system seemed to be breaking down. Mr. L.C. Porter, who had headed the No. 4 group, had resigned and his task was delegated to Mr. Breckenridge. Possibly because of the date being so close to Christmas, only 9 of the 18 recognized members of the Aviation committee attended.

Attending the 4th meeting of the Committee, held March 21, 1931, were the following:

F.C. Hingsburg as Chairman
J.W. Barker
F.H. Bassett
F.C. Breckenridge
R.W. Cost

S.G. Hibben
L.B. Lighton
K.W. Mackall
H.E. Mahan
Mr. Tate, representing J.D. Peace Jr.

Definition of aviation lighting terms was the first order of business. Only the British aviation committee had responded to the questions about national practice, so we had no information about other European systems.

At the 5th meeting of the committee, held November 11, 1931, at the headquarters of the IES, the subcommittees were revised to five in accordance with the following:

- No. 1 – Airport Lighting, Chairman – K.W. Mackall
Members: Messrs. Bassett, Mahan, and Tuck.
- No. 2 – Airway Lighting, Chairman – F.C. Hingsburg
Members: Capt. Hingsburg to select.
- No. 3 – Aircraft Lighting, Chairman – H.W. Cost
Members: Messrs. Lighton, Peace, Army and Navy
- No. 4 – Definitions and Nomenclature – Chairman – D.C. Young
Members: Messrs. Barker, Breckenridge, and Mackall
- No. 5 – Research, Chairman not appointed
Members: Barker, Breckenridge, and Gage.

At this meeting Breckenridge became chairman. It was moved and seconded that the Secretary write a letter to Captain Hingsburg expressing the appreciation of the committee for his work and personal effort in preparing the excellent papers program for both the IES and the ICI.

Wright Field at Dayton, Ohio, was the site of the 6th meeting of the IES Aviation Lighting Committee on April 11-12, 1932. This field, which then had mowed grass runways, later became part of the famed Wright Patterson Air Force Base.

The membership present included Breckenridge, Chairman, and Bruner, Cost, Gage, Green, C.D. Jobson – representing P.R. Bassett, Maukall, Peace, Sipp, Stahl, Tuck, and Young. Members listed as absent were: Barker, Bear, Grant, Hingsburg, Lighton, Rosendahl, and Thomas. The minutes of this meeting included a list of visitors: Carlson from Sperry Gyroscope Company, Simpson from American Gas Accumulator Company, and Smith of Pyle-National Company. These visitors represent companies that later became active participants in the Committee work.

The sub-committees were again revised:

AIRWAYS	AIRPORTS	AIRCRAFT	RESEARCH	NOMENCLATURE
Tuck (Ch)	Mackall (Ch)	Cost (Ch)	Anderson (Ch)	Young (Ch)
Bear	Green	Bruner	Barker	Barker
Hingsburg	Bassett	Grant	Gage	Breckenridge
Stahl	Sipp	Lighton	Green	
	Thomas	Peace		
	Stahl	Rosendahl		

This meeting involved actual inspections of equipment installed on an operating airfield and a chance to participate in night flights to see the different equipment as it presented itself to the pilot. At the meeting following the day after the night flights, there was great deal of discussion and appreciation of the opportunity afforded the members to see the equipment in operation.

The seventh meeting of the committee was held at the General Electric plant in Schenectady,

NY, on Jan 16, 1933. It was largely concerned with Aircraft Lighting. Seeking information on American and foreign practice made development of a questionnaire one item of business. The other matter was the discussion of how to define an obstruction and how they should be marked.

It was April 25, 1934, before the next meeting of the committee was held; this time at the Bureau of Standards in Washington. Besides the Chairman, Breckenridge and the Secretary, D.C. Young, only eight members attended. There were complaints: No progress was being made on setting standards for marking obstructions. Only one reply to the questionnaire on aircraft lighting had been received. Department of Commerce approval of a flashing red boundary light was a mistake and should be rescinded. Some definitions of aircraft lights were approved.

The 9th meeting of the Aviation Lighting Committee was held at Nela Park the General Electric plant in Cleveland, Ohio, on December 7th, 1934. This meeting was concerned primarily with position lights on Aircraft: forward white landing lights, green sidelights on the right side of airplane and red on the left. One of the visitors was a J. Herlihy from United Airlines who thought the Boeing 237 lights were good but greater intensity would be desirable. Two landing lights outside of the sweep of the propellers were recommended. It will be noted that airport lighting, except for obstruction lighting, was a minor consideration in these last three meetings.

Mr. Les Simpson and the American Gas Accumulator Company were the hosts of the 10th meeting of the Aviation Lighting Committee, held at 1603 K. Street NW, in Washington DC. Besides Breckenridge, the Chairman, only 5 regular members of the committee were present: Gage, Grant, Lighton, Simpson and Pennow. W.S. Hadaway was present as an alternate to R.W. Cost. However there were seven visitors: Jacques Benard (from France), James Mathews, Paul Meyers, L.M. Merrill, H.C.Ritchie, C.L. Stanton, and a Mr. Roper all of whom contributed substantially to the discussions. The question of having an Aviation Test Facility such as was eventually established at Atlantic City, N.J. was debated. Numerous other questions about what recommendations should be made to the Department of Commerce were considered.

It was back to Nela Park to the new General Electric Lighting Institute for the 11th meeting of the Aviation Lighting Committee on October 15, 1935. Only three of the so-called regular members of the committee: C.F.Green, G.L. Monroe, and Les Simpson, in addition to the Chairman (Breckenridge) and Secretary (D.C. Young), were present. However, six other interested persons attended: Clarke, Dircksen, Gazley, Harding, Roper, and Stanton were attendees. The main purpose of the meeting was to consider the resolutions adopted at the meeting of the International Committee on Illumination (ICI) in Karlsruhe, Germany. Mr. Breckenridge had attended that meeting and had visited several European Airports and had viewed several from the air at night. He gave his view that in the interest of international uniformity we should approve the compromise resolutions and where we had substantial disagreement, should voice it in a separate document. This was agreed to.

For the first time the IES Aviation Lighting Committee met outside the United States in Ottawa, Canada, on September 4, 1936. Almost from the beginning, Canadians had participated in the work of the Committee so it was appropriate that a meeting be held north of the border. In addition to the customary welcoming remarks by officials of the government, there was a serious discussion about lighting landing areas. One proposal was floodlights. Many years later, an experimental installation of floodlights on the side of the runway was made at Atlantic City. Testing proved it was not satisfactory. Air Traffic Control was another subject that came up for discussion. These problems came up early in aviation.

The 13th meeting of the Aviation Lighting committee held June 18-19, 1937, at the National

Bureau of Standards in Washington was a landmark in the history of the committee. It was called

CONFERENCE ON AVIATION LIGHTING

held under the Auspices of the

AVIATION LIGHTING COMMITTEE OF IES

The changed name may have been responsible for the large number of people, forty-five, who attended. The minutes of this meeting included a complete list of the attendees together with their company or governmental affiliation. Mr. Breckenridge as Chairman outlined the twofold purpose of the meeting.

- (1) to formulate an American point of view with regard to aviation lighting problems, and
- (2) to make possible an exchange of ideas between illuminating engineers, aircraft engineers and airport engineers.

Other Bureau of Standards people contributed important papers.

Mr. M.K.Laufer led discussions on port and starboard, and landing lights on aircraft. A most significant paper by Mr. A.L. Lewis of the Bureau suggested use of a high voltage distribution system with individual transformers at each light for runway lights. This has become an almost universal standard practice.

This meeting included a night trip to Washington National Airport and night flights to view equipment installed there. Colors for aviation lights were covered in a paper by Mr. W.R. Schaub of the Bureau.

The 15th meeting of the committee was held June 17th 1938, at the Baron Steuben Hotel in Corning, NY. The list of attendees was as follows:

H. Ainsworth	-Canada Dept. of Transport, Ottawa, Canada
E.W. Beggs	-Westinghouse Electric & Mfg. Co., Bloomfield, NJ
F.C. Breckenridge	-Bureau of Standards, Washington, DC
A.H. Clarke	-Crouse-Hinds Co., Syracuse, NY
H.P. Gage	-Corning Glass Works, Corning, NY
W.G. Grimes	-Grimes Mfg. Co., Urbana, Ohio
W.T. Harding	-US Air Corps, Wright Field, Dayton, Ohio
W.A. Pennow	-Westinghouse Electric & Mfg. Co., Cleveland, Ohio
L.C. Simpson	-American Gas Accumulator Co., Washington, DC
H.H. Trilman	-US Air Corps Wright Field, Dayton, Ohio
D.H. Tuck	- Holophane Co., New York, NY

Topics discussed at the meeting included: Neon and fluorescent lights for approach and runway lighting, airport flood lighting, illumination for water landings, beacons, 24 volt and 115 volt lighting systems in aircrafts, aircraft instrument illumination, and a wide range of subjects with no particular conclusions. Corning Glass Company was the unofficial host for this meeting.

Although 1938 was the year in which Prime Minister Chamberlain of Great Britain went to Hitler and sold out Czechoslovakia in order to achieve "Peace in our time," and World War II was

impending in Europe during 1939, there was no indication of awareness in any minutes of the Aviation Lighting Committee meetings during those years.

Before the 15th meeting of the committee was held at the Bureau of Standards in April 1939, the Civil Aeronautics Authority had been established. Aviation was no longer a step-child of the Department of Commerce. Mr. H.J. Pearson, who had represented the Bureau of Air Commerce on the Aviation Lighting Committee, was now one of the people from Civil Aeronautics Authority on the committee.

The April meeting brought 28 people together as follows:

J.F. Angier	Bureau of Standards	Washington, D.C.
J.A. Bartlet	Bureau of Standards	Washington, D.C.
J. Bartow	Bartow Beacons	Philadelphia, PA
W.S. Bennett	Corning Glass Works	Corning, NY
F.C. Breckenridge	Bureau Of Standards	Washington, D.C.
A.H. Clarke	Crouse-Hinds Company	Syracuse, NY
A.D. Dircksen	US, Army Air Corps Wright Fld	Dayton, OH
W.G. Grimes	Grimes Mfg. Company	Urbana, OH
W.T. Harding	US, Army Air Corps Wright Fld	Dayton, OH
John	Adams & Westlake	Elkhart, IN
Kirchner	American Airlines	Chicago, IL
R.W. Knight	Civil Aeronautic Authority	Washington, D.C.
C.A. Douglas	Bureau of Standards	Washington, D.C.
T.E. Mc Dowell	Pyle National Co.	Chicago, IL
I.R. Metcalf	Civil Aeronautic Authority	Washington, D.C.
L.B. Moore	General Electric Company	Cleveland, OH
H.J. Pearson	Civil Aeronautic Authority	Washington, D.C.
W.A. Pennow	Westinghouse	Cleveland, OH
M.F. Peters	Bureau of Standards	Washington, D.C.
J.N. Roper	Navy Bureau of Aeronautics	Washington, D.C.
E.J. Rudder	Bureau of Standards	Washington, D.C.
F.C. Sandretto	United Airlines	Chicago, IL
S.C. Stafford	Adams & Westlake	Elkhart, IN
H.H. Tellman	US Army Air Corps Wright	Dayton, OH
J. Vitol	Civil Aeronautic Authority	Washington, D.C.

This meeting was largely concerned with getting its recommendations on aircraft lighting and power systems over to the new Civil Aeronautic Authority. By this time, the CAA had an experimental operation in place in Indianapolis, IN, and reference was made to some of these tests.

The sixteenth meeting of the Aviation Lighting Committee of the IES was held October 20, 1939, at the Lamp Division of Westinghouse Electric at Bloomfield, NJ. There were 16 people there divided as follows:

GOVERNMENT

Bureau of Standards	F.C. Breckenridge	Washington, D.C.
Civil Aviation Authority	H.J. Pearson & E.J. Rudder	Washington, D.C.
Navy Bureau of Aeronautics	J.M. Roper	Washington, D.C.
US, Army Air Corps	A.D. Dirksen	Dayton, OH

OTHER

American Airlines	Kirchner	Chicago, IL
American Gas Accumulator Co.	L.C. Simpson	Washington, D.C.
Bartow Beacons Co.	J. B. Bartow	Blue Bell, PA
Corning Glass Works	W.S. Bennett	Corning, NY
Crouse-Hinds Co.	A.H. Clarke	Syracuse, NY
General Electric Co.	L.B. Moore	Cleveland, OH
Grimes Mfg. Co.	W.G. Grimes	Urbana, OH
Holophane	D.H. Tuck	New York, NY
Westinghouse Electric & Mfg.	R.R. Brady & E.W. Beggs	Bloomfield, NJ
“ “	W.A. Pennow	Cleveland, OH

Some of the ideas that were suggested here later became adopted as standard practice, e.g. approach light systems longer than 1500 feet; and bars of lights would be better than single point sources.

This meeting adopted specifications for the position and intensities and angular spread of position lights on aircraft.

World War II started in Europe about 6 weeks after this meeting adjourned.

To summarize the first ten years of the Aviation Lighting Committee of the IES, it appears that F.C. Hingsburg of the Airways Division of the Department of Commerce was moving spirit in organizing the group. General Electric Company was represented by D.C. Young of Nela Park, H.E. Mehan from Schenectady and L.C. Porter from the lamp works at Harrison, NJ. Westinghouse Electric had S.C. Eibben from the lamp works at Bloomfield, NJ; Corning Glass Works had a Dr. Gage, Cooper Hewitt Company sent F.A. Faulke; and Sperry Gyroscope Company had Mr. P.R. Bassett as a member. A Professor, S.K. Barrett of New York University, rounded out the principal members of the group.

The chairman of the group became officially or unofficially the representative of the United States on the International Committee on Illumination, and attended annually or biennial meeting held in Europe, because the desirability of standardization was generally recognized. Mr. F.C. Breckenridge took over as Chairman in November 1931 and guided the committee for many years.

The high water mark of the decade was the 1937 meeting which drew 45 attendees, including Canadian and Air Corps and Navy representatives, and many manufacturers.

CHAPTER 2: THE COMMITTEE IN THE FORTIES

1940

The Civil Aeronautics Authority Experimental Center at Indianapolis Municipal Airport was the site of the next meeting of the committee. The date was February 29, 1940. World War II was 6 months old. There were 30 people present. American Airlines provided planes for night flights to view the light installations.

Breckenridge presided. The attendees were as follows:

GOVERNMENT

CIVIL AERONAUTICS AUTHORITY	Paul Morris Washington, DC H.J. Pearson J. Vitol W. Boesch R.C. Gazley D.E. Ellis
BUREAU OF STANDARDS	F.C. Breckenridge
NAVY BUREAU OF AERONAUTICS	L.C. Davies H.B. Jones J.M. Roper
US ARMY AIR CORPS	F.D. Gore W.T. Harding Wright Fld, Dayton, OH P.E. Klausmeier H.H. Tollman
AIR CHAMBER OF COMMERCE	A. W. Ayer Washington, DC
AIR TRANSPORT ASSN.	F. W. Barker Chicago, IL

MANUFACTURERS

American Gas Accumulator	L.C. Simpson Washington, DC
Bartow Beacons Inc.	J.B. Bartow Blue Bell, PA
Corning Glass	W.S. Bennett Corning, NY
Crouse Hinds Co.	A. H. Clarke Syracuse, NY
Grimes Mfg. Co.	W.G. Grimes Urbana, OH
Holophane Co.	D.H. Tuck New York, NY
General Electric Co.	Kurt Franck Newark, OH
Westinghouse Electric	L.B. Moore Cleveland, OH
	W.A. Pennow
	W.C. Norvell
	E.W. Beggs Bloomfield, NJ
Westinghouse, Canada	G. F. Mudgett Hamilton, Ontario
Pyle National Co.	L.A. Vilas Chicago, IL

CIVIL AVIATION CANADA

A.D. McLean Ottawa, Canada

This attendance showed a widening interest in the work of the Committee. For the first time, the War, "Fifth Column" and "Sabotage" came into discussion. The approach systems were a major topic of discussion. One line of lights or two? Should it be longer than the 1500 foot that was standard? What color was best for approach contact (runway) lights? Pennow, Tollman, Bartow, Breckenridge and Harding entered into an extended discussion. It was recommended that further study be made on colors. Minimum length should be 2000 feet. Neon or florescent lights did not have enough intensity.

The September 12, 1940 meeting, the 18th for the committee, was held at Spring Lake, NJ. The German Blitzkrieg had already knocked France out of the war and the bombing of Britain was under way. Breckenridge chaired the meeting but only 12 others attended. One of the subjects discussed was emergency lighting. Bombing could put an airfield out of operation. American fields were especially vulnerable because we had paved runways. In Europe most runways were not paved. Power from independent power plants and independent portable supply were suggested. The committee was still interested in seaplane landing areas and illumination of the same. This was not a very productive meeting. By December 1940, the secretary of the committee, Mr. Lewis B. Moore, had left Nela Park and the General Electric Company and joined Mr. Grimes at the Grimes Mfg. Co. in Urbana, Ohio.

1941

The National Airport at Washington was the site of the October 2-3, 1941, meeting of the committee. Attendees numbered 28, divided as follows:

GOVERNMENT

CIVIL AERONAUTICS ADMINISTRATION	W. Boesch Washington, D.C. R.L. Beavers L.M. Hammond I.D. Marshall H.J. Pearson E.J. Rudder J. Vitol
BUREAU OF STANDARDS	F.C. Breckenridge
NAVY BUREAU OF AERONAUTICS	L.C. Davies H.V. Martin
ARMY AIR CORPS	G.K. Clement M.W. Hawks B.M. Venable J.P. Huebsch W.T. Harding Wright Fld, Dayton, OH H.H. Tollman
DEPARTMENT OF TRANSPORT	H. Ainsworth Ottawa, Canada

MANUFACTURERS

American Gas Accumulator Co.	L.G. Simpson	Washington, D.C.
Bartow Beacons Inc.	J.B. Bartow	Blue Bell, PA
	A.L. Ziegler	Blue Bell, PA
Corning Glass Co.	J.P. Hoxie	Corning, NY
Crouse Hinds Co.	A.H. Clarke	Syracuse, NY
	J.F. Wueste	Syracuse, NY
General Electric Co.	K.D. Scott	Cleveland, OH
Grimes Mfg. Co.	L.B. Moore	Urbana, OH
Holoplane Co.	Gene G. Rae	New York, NY
Line Material Co.	W.H. Edman	
Pyle National Co.	E. Sipp	Chicago, IL
Westinghouse Electric	W.A. Pennow	Cleveland, OH

The reader will note that the Civil Aeronautic Authority has now become the Civil Aeronautics Administration, but still has the same initials, CAA. This meeting, little more than two months before the Japanese attack on Pearl Harbor, showed there was little agreement on standards for air field lighting, and approach lighting. The CAA would continue to use the seven foot neon tubes. In-runway lights two inches high were considered but would be obscured by snow and unmowed grass. The meeting included an inspection of the National Airport light on the ground and in night flight on the evening of October 2nd. The next day there was discussion of the night flight reactions. In view of the emergency situation in Europe, Breckenridge proposed to appoint an executive committee comprised of the chairman, the Air Force representative, the Navy people, and the CAA people to try to establish some standards. This group was to get started the next day and try to reach some conclusions.

1942

The twentieth and first war time meeting of the Aviation Lighting Committee was held at the National Bureau of Standards in Washington, D.C. on June 30, 1942. F.C. Breckenridge chaired. The attendance was twenty-three divided as follows:

GOVERNMENT

CIVIL AERONAUTICS ADMINISTRATION	J.F. Angier	Washington, D.C.
	R.L. Beavers	Washington, D.C.
	R.C. Blatt	Washington, D.C.
	J. Vitol	Washington, D.C.
NATIONAL BUREAU OF STANDARDS	F.C. Breckenridge	Washington, D.C.
	C.A. Douglas	Washington, D.C.
	R.K. Laufer	Washington, D.C.
NAVY BUREAU OF AERONAUTICS	Lt. J.V. Koch	Washington, D.C.
	A.L. Lewis	Washington, D.C.
ARMY AIR FORCES	W.T. Harding	Wright Fld., Dayton, OH

AIR CHAMBER OF COMMERCE

X.C. Gordon

Washington, D.C.

AMERICAN AIRLINES

Otto Kirchner

New York, NY

MANUFACTURERS

A.G.A. Company

L.C. Simpson

New York, NY

Bartow Beacons Inc.

J.B. Bartow

Blue Bell, PA

Corning Glass Works

J.P. Hoxie

Corning, NY

Crouse Hinds Co.

A.H. Clarke

Syracuse, NY

General Electric Co.

V.J. Roper

Cleveland, OH

Grimes Mfg. Co.

L.B. Moore

Urbana, OH

Holoplane Co.

D.H. Tuck

New York, NY

Westinghouse Electric

W.A. Pennow

Cleveland, OH

W.C. Norwell

Cleveland, OH

R.R. Brady

Bloomfield, NJ

The meeting discussed Hangar lighting and decided it should be turned over to the IES Committee on the Industrial Lighting. Seaplane buoy lights were out off to the next meeting. Mr. Pennow thought that existing lights were proving in service. The greater discussion was on the need for standardizing the lamps to be used in aviation lighting. Several hundred different lamps were discussed as were sealed Beam lamps. Par lamps were favorably talked about. To get equal output out of color fixtures would require about 5 times the power as required for white light fixture. One item that came up was the need to standardize installation procedures. Another matter discussed was how an airport could be blacked out in an emergency situation.

1944

There was no meeting held in 1943. The twenty-first meeting was held in the Department of Commerce building in Washington on March 29, 1944. The 39 people who attended this meeting can be divided up as follows:

GOVERNMENT

CIVIL AERONAUTICS ADMINISTRATION

J.F. Angier

Washington, D.C.

W. Boesch

H..J. Pearson

Jack Vitol

BUREAU OF STANDARDS

F.C. Breckenridge

NAVY BUREAU OF AERONAUTICS

A.L. Lewis

H.L. Reynolds

J.M. Roper

Col. Les Simpson (AGA)

Lt. M.A. Warskow

ARMY AIR FORCES

G.K. Clement AC/AS

Maj. W.T. Harding Dayton, OH

G.K. Kervern Dayton, OH

Maj. W.H. McCandless Dayton, OH

Maj. J.P. Huebsch AC/AS- Wash., D.C.

ALASKA DEPT. ENGINEER

W.S. Gordon Anchorage, AL

WAR PRODUCTION BOARD

A.A. Fox Washington, D.C.

CANADA GOVT.

Dept. of Transport

R.C.A.F. Training Staff

R.C.A.F. Works & Building

H. Adssworth Ottawa, Canada

S.G. Malloy

W.A. Wirrhum

MANUFACTURERS

A.G.A. Company

Bartow Beacons Inc.

Corning Glass Works

Crouse-Hinds Company

Ebasco International Corporation

General Electric Company

Grimes Mfg. Company

Holophane Company

Kopp Glass Company

Line Material

Pyle National Company

Westinghouse Electric

J.W. Steiner & R. Kaemmerer

J.L. Oestnaes Elizabeth, NJ

J.B. Bartow Blue Bell, PA

J.P. Hoxie Corning, NY

A.H. Clarke Syracuse, NY

J.F. Wueste Washington, DC

E.A. Holden New York, NY

V.J. Roper Cleveland, OH

L.B. Moore Urbana, OH

D.H. Tuck New York, NY

F.C. Ashe Swissvale, PA

H.F. Thorne New York, NY

W.H. Edma E. Stroudsburg, PA

F.M. Currie Chicago, IL

R.J. Brady Bloomfield, NJ

J.D. Hall Washington, DC

At this meeting there was discussion of buoys for sea plane handling, but not much progress. George Clement reported that the Army, Navy and CAA representatives had succeeded in establishing many standards on color sequence and mounting dimensions. Central procurement and allocation of materials contributed to successful solutions of problems. Major Simpson, formerly of A.G.A., contributed greatly to the success of the war time program. There was general acceptance of flashing position lights on the outside of aircraft. A consensus on these matters seems to be developing.

1945

There seems to have been no meeting of the committee in 1945, but there was continued cooperation between the Army, Navy and CAA to the creation of standard practices. The War was over in August of 1945.

1946

The next meeting, the twenty-second, was held in Washington at the Department of Agriculture building on April 8-9, 1946. This post-war meeting brought out 45 attendees divided as follows:

GOVERNMENT

CIVIL AERONAUTICS ADMINISTRATION	J. R. Angier R. L. Beavers Orrin Farris H. F. Hillis E. B. Kerns F. A. Mandell F. J. Pearson L. C. Vipond	Washington, DC
BUREAU OF STANDARDS	F. C. Breckenridge V. T. Burns C. A. Douglas D. P. Judd	
NAVY BUREAU OF AERONAUTICS	Lt. Com. J. Partalt Lt. J. H. Cary A. L. Lewis Lt. N.H. Kunz	Patuxent Rvr, MD
ARMY AIR FORCES	George Clement, N. H. Floyd Lt. Col. W.T. Harding, Glenn Kevern	Washington, DC Dayton, OH
ARMY-NAVY VISION COMMITTEE	H. R. Blackwell	Ann Arbor, MI
ILLUMINATING ENGINEERING SOCIETY	C. L. Crouch	New York, NY
MOUNT ROYAL STATION	Chas. Adler Jr.	Baltimore, MD
CIVILIAN PRODUCTION ADMIN.	A.A. Fox	Washington, DC
AIR TRANSPORT ASSN.	W. A. Warskow	
AMERICAN AIRLINES	E.A. Cutrell	New York, nY

MANUFACTURERS

American Gas Accumulator	L. M. Merrill Les Simpson J. Rhodes	Elizabeth, NJ Washington, DC Elizabeth, NY
Bartow Beacons Inc.	J. Alrony J. B. Bartow	Blue Bell, PA
Corning Glass Works Crouse-Hinds Company	J. P. Hoxie A. H. Clarke H. L. Guiney	Corning, NY Syracuse, NY Washington, DC
General Electric Company	D.C. Miller V. J. Roper	Cleveland, OH

MANUFACTURERS (Continued)

Grimes Manufacturing	W. G. Grimes	Urbana, OH
	L.B. Moore	Urbana OH
Kopp Glass Company	C. E. Leberknight	Swissvale, PA
	J. L. Newton	Swissvale, PA
	F. C. Asche	Swissvale, PA
Line Material Company	R.E. Madigan	Stroudsburg, PA
Westinghouse Electric & Mfg. Co.	W.A. Pennow	Cleveland, OH
Westinghouse Canada	N.O. Weston	Hamilton ON

This was a very important meeting. It was devoted largely to approach lighting. Cutrell gave the American Airlines and pilot's desires in a satisfactory approach system. Mr. Warskow gave the viewpoint of the Air Transport Association that the system should,

1. HAVE A SINGLE STRAIGHT LINE OF LIGHTS.
2. BE COMPOSED OF UNITS HAVING A WIDE SPREAD,
3. BE EQUALLY USEFUL FOR DAY AND BRIGHT USE,
4. BE COORDINATED WITH THE INSTRUMENT LANDING SYSTEM, AND
5. BE ECONOMICAL TO INSTALL AND OPERATE.

Glenn Kevern from Wright Field gave a review of the Air Force experience during the last three years, citing result in fog bound Aleutians. Daylight fog provided the worst problems; about 4000 times as much candlepower to provide guidance in heavy daylight fog as in nighttime fog. Pilots cannot exactly follow the instrument landing system flight path so wide-angle lights are needed. Kevern also discussed the limitations in visibility due to the structure of the cockpit and airfield lighting. Lt. Colonel Harding suggested that our committee confine itself with obtaining and disseminating basic data for the interest of manufacturers and not concern itself with phases of the design and installation of the equipment. Design and installation procedures are to be left to the joint board Army, Navy and CAA. The real problem in approach lighting was the difficulty in projecting light through day light fog. More study of transmissivity is needed. A second meeting was held November 4-5 at the CAA Experimental Station in Indianapolis, Indiana. Three papers on Instrument Panel Lighting were presented by Kevern of Wright Field, Roper of the Navy Bureau of Aeronautics, and by Paul Greenlee of the General Electric Company. The Experimental Station has a Slope Line System which the attendees inspected in daylight and in night flights. This was the first attempt to solve the problem later met by the VASI and PAPI systems. Fog problems are being tested at Arcata, California. To date, 100 flights under poor visibility conditions, both day and night, have been made. More tests will be made in the next fog season. At this meeting Mr. R.R. Brady, of Westinghouse Electric, was chairman, permitting F.C. Breckenridge, who had been chairman since November of 1931, to participate fully in the discussions. There was considerable discussion about preparing a Compendium of aviation light practices and of articles for the IES Lighting Handbook. Thirty-three people attended this meeting which was the 23rd committee. This year the executive committee met between regular meetings.

1947

A conference on Aviation Lighting, held under the auspices of the Aviation Lighting Committee of IES, was held at Westinghouse Electric plant in Cleveland, Ohio on June 23-24 of 1947. The total attendance was 52 people of which 21 were designated as members of the committee and 31 were called visitors. This distinction was somewhat artificial, because nobody attended

unless they had significant interest in aviation lighting and frequently visitors became members before the next meeting. All participated freely in the discussions. This meeting had its first female visitor, a Miss K. Kohler, part of the Westinghouse International delegation from New York. The breakdown of the attendance was as follows:

GOVERNMENT

CIVIL AERONAUTICS ADMIN. CAA	R.L. Bearvers O.F. Ferris J.H. Kerr F.B. Komery B.A. Hemelt L.C. Vipond M.S. Gilbert H.J. Pearson	Washington, DC Indianapolis, IN
BUREAU OF STANDARDS	F.C. Breckenridge	Washington, DC
NAVY BUREAU OF AERONAUTICS	A.L. Lewis	
USAAF AMC	J.E. Constanais Capt. L.B. Lockwood Maj. D.L. Boone	Wilmington, OH
WRIGHT FIELD	G.M. Kevern W.T. Harding	Dayton, OH Dayton, OH
LANDING AIDS EXPERIMENTAL STATION	R.L. Champion	Arcata, CA
AIR TRANSPORT ASSOCIATION	L.O. Barnes F.B. Brady	Washington, DC
AVIATION MAINTAINANCE	R.C. Blatt	New York, NY
IES	C.L. Crouch	
CANADA GOVERNMENT NATL. RESEARCH	W.E. Middleton	Ottawa, Canada

MANUFACTURERS

American Gas Accumulator	L.C. Simpson M.A. Warskow L.M. Merrill	Washington, DC Stroudsburg, PA
Corning Glass Works	J.P. Hoxie F.N. Neal	Corning, NY
Crouse-Hinds Company	A.H. Clarke	Syracuse, NY

MANUFACTURERS (Continued)

General Electric Company Nela Park	V.J. Roper D.C. Miller P.H. Greenlee J.P. Rutherford	Cleveland, OH Schenectady, NY
Grimes Manufacturing Company	L.B. Moore	Urbana, OH
Holophane Company	D.H. Tuck	New York, NY
Kopp Glass	Jim Newton F.C. Ashe	Swissvale, PA
Line Material Company	R.E. Madigan W.H. Edman	Stroudsburg, PA
Sylvania Electric Company	D.I. Coggins	Boston, MA
Westinghouse Electric International	N.C. Burke L.W. Johnson Ms. K. Kohler E.R. Kelsey	New York, NY
Westinghouse Electric Corporation	E.B. Karns H.F. Himtz J. B. O'Donnell W.A. Pennow Chas. L. Scott G.W. Sickler R.J. Stefany	Cleveland, OH Washington, DC Bloomfield, NJ
Canadian Westinghouse	H.O. Weston	Hamilton, Ontario
Curtis Wright Corporation	R.A. Ruggo	Columbus, OH
A/S Proton	R. Eger	Oslo, Norway

*Westinghouse Company had 12 people in attendance: 27% of the total.

Although the committee was not directly involved, important testing of approach lighting systems took place at Newark Airport and at Arcata, California, during the winter of 1946-47. Newark tests were run by the Air Transport Association of America. System A, at Newark, consisted of large red steady burning lights with 5 possible brightness levels at 100 feet spacing for 2800 feet from threshold. System B consisted of high intensity, white, sequenced flashing lights combined with 4 red neon lights extending for 2800 feet in front of the threshold. Nine different combinations of these lights could be presented to the pilot. All of these lights were along an extension of the left side of the runway. The Arcata system consisted of two lines of red high intensity steady burning lights. The lines started at the right and left sides of the runway but diverged as the distance from the threshold increased. None of these systems were adopted as the

US standard, but these were real operational tests.

The second 1947 meeting of the Aviation Lighting Committee was held November 17-18 at Wright Field in Dayton, Ohio. R.R. Brady was chairman and 38 people attended, of whom 20 were termed visitors. Among them were: Walter Fisher of the Navy Bureau, John Haney from Crouse-Hinds, R.K. Davis from Wright Field, and A.B. Winters from Revere Electric in Chicago; all of whom were very active in future activities of the Aviation Lighting Committee.

Mr. Brady announced that Glen Kevern had been appointed Chairman of the Approach Lighting Sub-committee and Orrin Ferris of CAA was a member of that group. Mr. Brady also asked for suggestions of names for the next Chairman of the Committee.

Mr. Vipond discussed Airport Lighting Systems for small airports. The testing at Arcata was discussed in a paper by C.W. Grimes and B.B. Clark. Walter Fisher discussed lighting of instrument panels.

1948

There were two conferences on Aviation Lighting held in 1948. The first on June 24-25 was held at New York at the General Electric office, and included a visit to the New York Experimental Airport (now Kennedy). The second meeting was held November 1-3 at the Landing Aids Experimental Station at Arcata, California. Attendance at the first meeting was 37, of which 20 were from the State of New York and none from the West Coast. At the second meeting, there were 15 from the West Coast and 3 from State of New York.

Approach lighting and safe landing in bad weather were the principal theme of both conferences. We have already discussed the Newark and the Arcata tests. David Miller of General Electric at Cleveland became Secretary of the Arcata meeting.

The April 21-22 Aviation Lighting Conference was held in the Washington, DC area; 46 people were present of which 24 were visitors. The presentation of papers and discussion took place at the Bureau of Standards. An inspection tour was made to the Naval Air Test Center at Patuxent River in Maryland.

Airfield Lighting Simulators was the subject of a paper by A.L. Lewis of the Navy Bureau of Aeronautics. This was the first mention of Simulators which have become very important in training pilots and in children's games. Similar work has been done in England by Mr. Calvert.

Dr Blackwell of the University of Michigan presented a paper on the Roscommon Visibility Tests. This is a project sponsored by the Navy which seeks to determine the technical limits on visibility and correlate the results of laboratory observations with real life observations.

A paper on aircraft lights giving the current Navy practice was presented by John M. Roper of the Navy Bureau of Aeronautics. It covered landing lights, helicopter lights - for the first time, I believe - and instrument lighting.

The afternoon and evening of the first day was spent at the Patuxent River experimental Center. Day and Night observations of taxiway guidance, seadrome marker, runway marker and approach lights, and helicopter and aircraft lights were demonstrated.

The second session was back at the Bureau of Standards on the 22nd. A movie on Arcata tests was presented. Bernie Hemelt of the CAA gave a paper on Taxiway Lighting and told that elevated taxiway fixtures per L-822 were to replace the previously used semi flush lights.

R.J. Helberg of Boeing Airplane Company gave a description of the lighting on the new Boeing Stratocruiser. Mr. Charley Douglas discussed the development of the Transmissionmeter at Arcata to try to measure quantitatively the effect on fog.

Finally Mr. Breckenridge gave a report on the recent meeting of International Committee on Illumination and its recommendations. He also advised that the ICI was being replaced by the I.C.A.O.

The next Aviation Lighting Conference took place on October 24-25 at the CAA Technical Development Center at Indianapolis, Indiana. Only 34 persons attended this meeting, and 18 of them were listed as visitors. It is interesting to note only 12 of the attendees had been at the April meeting. However, almost all of the organizations, both governmental and commercial, were represented at both meetings. Mr. L.B. Moore of the Grimes Mfg. Co. was the new Chairman of the committee.

The methods of standardizing color signals was the subject of two papers presented, one by John C. Holmes of London, England and another by F.C. Breckenridge of the National Bureau of Standards in Washington.

A paper on Airport Ground Traffic Control was presented by Capt. Wilson C. Cogswell, the Navy member of the Air Navigation Development Board (A.N.D.B.). More planes meant more problems.

Position lights on aircraft was the subject of a paper by R.F. Tanke of the CAA Dr. Maurice A. Garbell, the new director of the Arcata station spoke on developments on low approach and landing aids at the station.

The possibility of having a committee meeting in connection with the next IES conference in Pasadena, California was discussed.

During the forties there were two major concerns. The first was the development of equipment that would permit all weather approach and landing on aircraft. The second major concern was how to place sufficient lighting on the outside of the aircraft to enable pilots to avoid dangerous proximity or collisions in the air or on the ground.

CHAPTER 3: COMMITTEE IN THE FIFTIES

The Airport Lighting Committee did hold a meeting at the Pasadena General Conference of the Illuminating Engineering Society, but no separate minutes seem to have been recorded. The question came up at a November 20, 1950 meeting of the Executive Committee. Should the Aviation Lighting Committee again participate in the 1951 General Conference of the IES? It was decided by the executive committee that they should prepare for an aviation lighting session at the 1951 general conference.

The Aviation Lighting Committee did meet in Washington at the National Bureau of Standards on August 28th after the General Conference of the IES which had been held at the Shoreham Hotel. Attendance was 61 total, 20 members and 41 guests. New organizations represented for the first time were Bendix Radio Company and Glenn L. Martin Company Airplane Manufacturers.

The first 1952 meeting was held at the CAA Technical Development and Evaluation Center at Indianapolis on May 15-16.

Twenty-five members of the committee were present as were 41 guests. Organizations present for the first time were:

Ralph H. Burke Company, Airport Designers from Chicago, IL
Marine Corps Munitions Board
Heavy Duty Electric from Milwaukee, WI
Martzolf Electric, a contractor from Kokomo, IN
Dunlap & Associates, Consultants from Stamford, CT
G.H. Merlin, Senior Dist. Airport Engineer from Athens, Greece
Indiana Power Company from Kokomo, IN

This meeting was devoted largely to taxiway guidance and taxiway signs. B.A. Hemelt and M.S. Gilbert presented the views of the CAA and the Indianapolis center on what was needed. Dr. Jesse Orlansky presented the results of the studies made by Dunlap and Associates. They differed substantially from the Gilbert Hemelt view and there was considerable discussion concerning the differences.

There was a joint dinner session with the Indiana Chapter of the IES. Over 100 people attended. R.G. Blatt was Chairman of the meeting and David C. Miller was the Secretary.

The second meeting 1952 was held at Corning Glass Works on October 15 and 16. Twenty members of the committee were presented and 31 guests. Organizations represented for the first time were:

Kamen Aircraft from Windsor Locks, CT
The Thermal Research Company at Conshohocken, PA
Niagara Power Company, the local public utility
Gould Farmer Company, Inc. of Syracuse, NY
Glowmeter Corporation of Buffalo, NY
Guggenheim Aviation Safety Center from New York, NY

Most of the papers here were rehashing or bringing up to date on previously presented papers. There were two talks on glass and its development from ancient times to modern developments. A paper was presented that suggested eliminating fog trouble by heating the air above a runway so as to evaporate the fog. It was decided it would not work.

1953

A March 24-25 meeting of the Aviation Lighting Committee was held at the Municipal Auditorium in Kansas City, MO. The meeting was attended by 11 members and 16 guests. The first session was concerned largely with aircraft lighting. An Aircraft rotating marker light originally developed by United Airlines was described by M.K. Laufer. It is being adopted by a number of the airlines.

The second 1953 meeting was held in Washington, DC on October 13-14 at the National Bureau of Standards. It had a good attendance, 27 members 45 guests.

The morning session on Friday was devoted primarily to papers on helicopter lights and landing areas. The afternoon session opened with a discussion on Apron and ramp floodlighting, followed by a description of the lighting of the runways at Milwaukee's General Mitchell Airport. Lights installed there were produced by the Line Material Company of that city.

The most important information at this meeting was that an international and national standard for approach lighting had been reached. It was based on a centerline bar and crossbar system. The only problem was that U.S. Air Force and the Navy required a 1000 foot overrun or stopway area and this prohibits the installation of centerline bars in the last 1000 feet of the approach. The CAA had already designed an approach light fixture based on the PAR 56 sealed beam lamp and issued a contract for a large quantity of them, the so-called "Potty" light. The existence of joint-use airports by military and civilian aircraft made the development of some sort of semi flush lights of high intensity very important. Getting near horizontal light out of a hole in the ground became the problem.

The new organizations represented at the meeting were:

Jefferson Electric of Bellwood, IL (a Chicagoland suburb)
Ace Foundry Company, of Chicago
The Royal Air Force represented by Wing Commander Gibb

1954

The 1954 Spring Technical Conference of the IES Aviation Lighting Committee was held at the Astor Hotel in Milwaukee, Wisconsin on April 28-29. D.C. Miller of General Electric at Nela Park was chairman of the committee. Total attendance was 59, of whom the guests numbered 39.

Aircraft lighting was the subject of five papers presented in the morning. An application of condenser discharge flash tubes to the top and bottom of aircraft was described by Transocean Air Lines Director of Research. Three lights on top and three lights on the bottom flashing in sequence from back to front gave a directional indication.

In the evening, an inspection trip to the General Mitchell Airport was held. The principal item of interest was the High Intensity Runway Lights made by Line Material Company. The

system uses an indication type regulator providing continuous control from zero to 100% intensity. As the intensity is increased the beam is toed in.

The Fall Technical Conference was held on November 4-5 at Williamsburg, Virginia. Heliport lighting and helicopter lights were the principal topic of this meeting. A visit was made to Ft. Eustis, Virginia but the specific object of this visit was noted in the minutes.

1955

The 1955 Spring Technical Conference of the IES Aviation Lighting Committee was held April 5-6 at the General Electric Auditorium in New York City. Total attendance was 63 of whom 44 listed as guests.

Four papers were presented on aircraft lighting. All demanded higher intensity lighting. Mr. R.K. Davis brought out the point that lighting should be an integral part of the early development of a new airplane. A criticism of airport lighting from the viewpoint of the pilot was made by Capt. Smith of Capitol Airlines. The need for standardization was stressed. Finally, for the first time, the problems of Carrier landings were presented by L.C. Doane of L.C. Doane Company and Commander Robert of Patuxent River Naval Air Test Center. This session was followed by an inspection trip aboard the carrier U.S.S. Bennington at Bayonne, NJ.

The meeting held at the Severin Hotel in Indianapolis on November 8-9, was a high water mark for attendance. There were 181 interested persons present. The high speed Jet Aircraft coming on intensified the interest in lighting problems. There is an 11 page list of attendees that is too lengthy to be included in the short history.

1956

The Spring Technical Conference of the committee was held in New York City in the GE Auditorium on June 5-6. The list of attendees shows 94 names. Notable was the name of the Elfaka Flush Light Company was represented by Mr. Jean M. Ducharme and R.M. Egan. They had sold the New York Port Authority on installing their flush lighting at the Idlewild Airport. Many of the current members of the committee have never seen one of these units, however many at that time thought it was the answer to the need for flush runway lights. It was a fifteen foot long fan-shaped grill from under which a light could be projected to the incoming pilot. An inspection trip to Idlewild to see this installation was one of the features of this meeting.

F.C. Breckenridge, of the national Bureau of Standards and long time chairman and active member of the committee, extensively quoted the views of Mr. George Clement of the Pentagon Headquarters. Clement listed an imposing group of requirements which have to be met if the pilots are to be given the type of lights they consider necessary for landing high speed aircrafts. The list seemed to preclude the possibility that any light could be designed that would meet all of the requirements. In particular, there is a very strong demand now for "narrow gauge" runway lighting that is for runway lights which are mounted in two rows parallel to the centerline but well within the surfaced area of the runway. Lights with expendable tops seem to be excluded for this use because the probability of their being hit would be so high as to make replacement impractical. Flush light of the Elfaka type would be of some use in good weather for larger types of aircraft in which the pilots eyes are located 20 to 25 feet above the runway surface, but these lights would be of little use to lower types for larger planes with landing speed not greatly in excess of those now commonly used, but it seems that these lights will be unacceptable to pilots of high speed jet aircraft. The retractable

light is of no use in this case since it would be unsafe to have it exposed while the runway was in use.

A technical paper on the equivalence of steady burning lights with flashing lights and other papers by aircraft manufacturers and aircraft lighting manufacturers were also presented at this meeting. However, the main emphasis of this meeting was the effort to get near horizontal beams of light out of a hole in the pavement.

The author does not have any record of a fall meeting of the committee nor of a spring meeting in 1957. All of the above history has been gleaned from the minutes gathered by the efforts of Seward Ford of Crouse-Hinds Company.

1957

The 1957 Fall Technical Conference of the Aviation Lighting Committee was held at the Aeronautical Accessories Laboratory at Wright Patterson A.F.B. in Dayton, Ohio on October 22 and 23. This was the first meeting of the Aviation Lighting Committee that the author attended. A little background may be necessary. The dissatisfaction of the Air Force with available in-runway light fixtures as expressed by George Clement at the previous meeting led to the issuance of a development contract that resulted in specification for a semi-flush fixture called MC-2. It was to withstand snowplow operation and deliver a minimum beam of 5000 candela 5 degrees wide and 4 degrees high with a toe-in of 3 ½ degrees. Bids were requested on a quantity of 1217 lights with green filters and 655 without filters. Multi Electric was awarded the production contract. We found that by using a Par 56 lamp and army surplus tank periscope prisms we could substantially increase the output. The Air Force modified the specification to increase the minimum to 7500 candela. We refined the design, passed the snow plow tests and were in production by the time this meeting was held. Glen Kevern asked me if we would be willing to show a sample at this meeting. We were willing, so I attended my first meeting of the Aviation Lighting Committee. The meeting was primarily concerned with aircraft lighting and included a visit to the Grimes Manufacturing Company near to Urbana, Ohio. We do not have any minutes of this meeting, only the agenda previously prepared, that does not mention the MC-2 light. At this meeting a proposal was discussed to separate the aircraft lighting and the airport lighting groups. From this time on, they met separately.

An interesting item was the consideration of Radioisotope activated light sources. These types of equipment were never able to develop enough brightness to be seriously considered. At the time of this meeting, the Civil Aviation Administration was still the controlling government agency.

1958

On May 1, a meeting of the Aviation Lighting Committee, now concerned only with ground lighting, was held at the CAA Building in Washington. It was mainly a gathering of the separate sub-committees. During this period, the Federal Aviation Administration took over from the CAA. A new test facility had been established at Atlantic City, New Jersey.

The next meeting of the Aviation Lighting Committee was held November 18-19 at the Dow Air Force Base at Bangor, Maine. More than 100 people attended. Papers presented at this meeting by R.H. Jordan and L.C. Vipond covered the programs contemplated at the National Air Facilities Experimental Center (NAFEC) and at the University of California. First mention was made of "Button Type" fixtures, of "Fog Chambers" testing, and of "Glide Angle Guidance." These were all

subjects of which the committee would hear a great deal in later years. Russell Hartz presented the lighting needs of the Navy for carrier decks and seadrome landing areas. This meeting was held at Dow because it was the site of a definitive test by the Air Force of the Elfaka Open Grid lights.

They were installed in the last thousand feet of the Approach System, the Threshold, and the Narrow Gauge Touchdown area. At the last minute, Col. Roy L. Strong, who was in charge of the whole project, decided that an additional threshold of 61 MC-2 lights should be installed so that a direct comparison between the Elfaka and the MC-2 light could be made

The test was to last until March. Evaluation of the narrow gauge lights will include snow removal, drainage, aircraft damage, aircraft reaction, maintenance, replacement, training of maintenance personnel, special auxiliary electrical equipment, operating costs, out of service time for runway during repairs.

There were, of course, no results to report at this meeting, but when the results were reported after April, they were decisive.

I believe that no more open grid lights were purchased in the US and none are in use today.

1959

The first meeting of the Aviation Lighting Committee at NAFEC, the National Aviation Facility Experimental Center, was convened on March 24-25. R.J. Stephany of the Westinghouse Electric Company was chairman and 132 members and guests attended. All were interested in seeing the new facility. A paper on the development of the pancake light was presented by L.C. Vipond. The lighting aids under evaluation in the Narrow Gauge Touchdown Zone were three lamp bars of Elfaka grid units, six lamp bars of MC-2 prismatic units, and 10 lamp bars pancake inset fixtures. These last were epoxy cemented into 6 inch diameter, 1 inch deep holes, diamond bored into the pavement.

There were also two systems of floodlighting along the touchdown zone. All of us had an opportunity to night test these systems in a DC3 plane. The floodlights were not satisfactory. Several visual approach slope indicators were being tested including the British developed VASI System of which we are all familiar. It was for many years the International Standard.

Pilots were unanimous in asking for centerline lights and high speed turnoffs on the runways.

CHAPTER 4: COMMITTEE IN THE SIXTIES

It seems appropriate at this point to list the organizations and the personnel representing those whom attended the March 24th and 25th meeting of the Aviation Lighting Committee in 1960. It was held at NAFEC and 111 people attended.

GOVERNMENT

FAA from Washington:

W.C. Fisher, J.J. Gallagher, H.B. Decker, J.J. Bouvier, H.J. Lichtfeld,
R.K. McKelvey, L.C. Vipond, T.J. Williams

FAA from NAFEC:

R.F. Gates, Robert Jones, R.P. Weber, C.B. Phillips

Other FAA:

John Dufficy from Jamaica, NY
W.B. Minuse from Setauket, NY

Bureau of Standards:

F.C. Breckenridge of Washington, DC

US Air Force:

B.C. Kiley from Westover A.F.B. MA

Navy Department from Washington:

Russel D. Hartz

Philadelphia Navy Yard:

W.A. Simons, H.L. Cupp, Max Daroff, C. DeCinque

US Coast Guard:

C.F. Piestrup from Washington, D.C.

Port of New York Authority:

Louis Achitoff, J. Abelman, V.F. Converso, G.C. Kelley, Henry Wenson

Wayne County Road Commission:

W.L. Zolic of Detroit, MI

Canadian Government from Ottawa:

R.C.A.F., W.D. Callaghan
Department of Transport, N.F. Hall, R.H. Mungall

British Embassy:

N. Walker

NON-GOVERNMENTAL

Airline Pilots Association:

From Washington, D.C.: R.A. Stone & T.A. Basnight
From Palo Alto, CA: S.M. Anderson

Air Transport Association:

W.A. Jensen of Washington, D.C.

National Electric Manufacturers Association, NEMA:

C.H. Parris, New York City, NY

Flight Safety Foundation Inc.:

A. DeRonde, New York City, NY

Cornell-Gugenheim Aviation Safety Center:

R.M. Woodham, NYC

MANUFACTURERS

A.G.A. – Esna:

Les Simpson of Elizabeth, NJ

Airborne Instruments Laboratory:

T. Hooton, W.A. Warskow

Basic Products Corporation:

L.B. Lattin of Milwaukee, WI

James C. Buckley Inc.:

E.J. Dickenson, N.Y.C.

Corning Glass Works:

From Corning, NY, John F. Hoxie & Richard Dulude
From Greenville, OH, John A. Losh

Crouse-Hinds Company:

L.C. Doane, Essex, CT

Englewood Industries:

J.J. Duffy, Washington, D.C.

General Electric Company:

E.F. Bailer, Washington, D.C.
F.E. Carlson and R.L. Paugh from Nela Park
G.F. Johnson from Hendersonville, NC

HeviDuti Electric:

G.C. Doehler, Watertown, WI

Jefferson Electric:

R.W. Hagstrom, H.A. Wallis from Bellwood, IL

Joy Manufacturing Company:
G.C. Thym, St. Louis, MO

Kopp Glass:
From Swissvale, PA, G.E. Leberknight & F.S. Huot

Line Material Company (McGraw Edison):
J.B. Harvie, Arlington, VA
H.A. Van Dusen, Milwaukee, WI
T.J. White, Springfield, IL

Multi Electric Manufacturing Inc.:
From Chicago, IL, Paul Bees & Clem Mc Donald

Revere Electric:
A.B. Winters, Chicago, IL

Structural Concrete Production Company:
R.M. Egan of N.Y.C

Sylvania Electric Company:
T.M. Lemons, E.F. Weinberg & A.A. Weeks of Salem, MA
G.D. Rand of Washington, D.C.
Edgar Leubler of N.Y.C.
D.W. Rowton of Wheeling, West VA

Westinghouse Electric Manufacturing:
From Cleveland, OH: C.H. Loch & W.A. Pennow
From Bloomfield, NJ: W.A. Murray, R.F. Townsend
From Washington, D.C.: C.H. Pauly & T.T. Thurston

During this period there was great interest in the MC-2 semi-flush prismatic lighting units. Variations were developed including Uni-directional 1 inch high units, uni and bidirectional units ½ inch high and a 1 inch omni-directional unit. Several manufacturers started to make and sell these units. One of the problems with these units was the depth of the structure which required a lamp base of considerable depth. With these units, the isolating transformer was installed in the lamp base.

The "Pan Cake" lights were an effort to overcome this objection. The first units that were tested in California were about ½ inch high and were actually glued to the pavement for centerline and high speed turn-offs. They developed into an 8 inch diameter unit that was epoxied into a one inch deep, diamond bored hole. Ultimately, this evolved into the current lights that are cemented into diamond bored 12 inch diameter and about 3 inch deep holes. These developments were possible because of the Quarts iodine lamps, which were small and could be installed so that the filament was very close to the runway surface level.

The isolating transformers, of course, could not be installed in these fixtures. The transformers were mounted in a large lamp base on the side of the runway and secondary leads carried in shallow slots diamond sawed into the runway surface. This procedure was useful in the installation of narrow gauge or centerline lights in an existing runway.

1960

The second 1960 meeting was held in New York City on December 8-9.

Many various subjects were covered during this highly productive meeting. One of the many important topics was the introduction of Visual Glide Slope Indicators. Also covered was the Helicopter Experience of the New York Port Authority. We visited a building that had a landing pad on the roof. We had a report of the first meeting of the ICAO Visual Aids Panel in Montreal which had concluded just two days before. ICAO, subsequently, had a great influence on international standards for airport lighting. This meeting was under the auspices of the New York Port Authority and for the first time discussed lighting in airport hangers. There was also a discussion of Airport Lighting in the USSR.

1961

The 1961 conference was held May 4-5 at the Shorham Hotel in Washington, D.C. The Chairman of this meeting was Charley Douglas of the Bureau of Standards. He has played a very important part in the Aviation Lighting Committee affairs. C.E. Leberknight of the Kopp Glass Company was the Vice Chairman. The subject of cloud height and light reflectance from clouds of fog was also discussed. A trip to Andrews Air Force Base was included. The 1962 meeting was scheduled to be at the new NAFEC base at Atlantic City, NJ.

1962

The June meeting of the Aviation Lighting Committee at Atlantic City and NAFEC was very important. The attendance was 107 persons representing all branches of the US government that had any interest in Aviation Lighting. A representative of the British Embassy was present. Every manufacturer of equipment had one or more people there. NAFEC provided the space and funding for actual testing of various concepts in visual navigational aids. Mr. Robert Gates gave a review of all the experimental testing that was underway there. Among the more important developments being tested here were the Red White Visual Approach Slope Indicator (VASI) system developed in Great Britain and adopted by ICAO as an international standard in 1961. The slogan, "Red over white, you're alright," described its effectiveness. Another was the shortened 1500 foot approach system. The Fog Test Chamber at Berkley, California being built by Professor D.M. Finch and tests to be run there was covered. Instrumental Panel Lighting was also the subject of one paper.

1963

The 1963 meeting of the Aviation Lighting Committee was held in Pittsburgh, PA on April 24 thru 26. The newly opened Pittsburgh Airport with the latest developments was the focus of this meeting. Henry Wenson of the Port Authority was Chairman. Attendees numbered 64. Mr. Vipond of the FAA described the testing going on in the fog chamber; Russ Hartz described the Navy precision landing system used on carriers. Bob Gates gave a report on the latest ICAO meeting; and a report on marking of Tall Towers and Catenary cable marking was also presented. Aircraft lighting was still a function of the Aviation Lighting Committee, and several papers, on these matters, were also presented.

1964

No records available to the author for this year.

1965

No records available to the author for this year.

1966

No records available to the author for this year.

1967

Walt Fisher, Chairman

No records available to the author for this year.

1968

Walt Fisher, Chairman

No records available to the author for this year.

1969

The Chairman of the Aviation Lighting Committee was Ron Paugh of the General Electric Company. Two meetings took place. The first was held in Washington, DC. March 4-6 was designed an Aviation Lighting Research Symposium under the joint sponsorship of the Aviation Lighting Committee and the Illuminating Engineering Research Institute. Most of the papers presented at that meeting were on the subject of fundamental seeing. The only paper on airport lighting was presented by Andrew Wall on in-runway VASI design. A trip to the Bureau of Standards was a feature of this meeting. One important outcome of this meeting was the proposal to establish a Government Contacts Sub-Committee.

The second meeting of the committee was held at the Holiday Inn Hotel at Lakewood, NJ, November 19th thru 21st. This is close to the Lakehurst Naval Air Test Facility where an inspection tour was made. This location was where the Navy experimented with lighter than air. A visit and inspection of the facilities at Lakehurst was a feature of this meeting.

A paper was presented on a multiple power supply for approach lighting systems. Mr. Alphonse Barr of FAA presented an interesting paper on "The Effectiveness of VASI in VFR Landings." Aviation Lighting Committee.

CHAPTER 5: COMMITTEE IN THE SEVENTIES

1970

No records available to the author for this year.

1971

The 1971 meeting was held in Ottawa, Ontario, Canada, under the chairmanship of W.D. Callaghan of the Canadian Department of National Defense from October 19 to October 22. Ottawa the capital of Canada is a beautiful city and our friends from the north did a magnificent job of this meeting. There were 95 persons who attended, not included a considerable number of wives of attendees.

On October 19th, there was a short meeting of the executive committee which was followed by the meeting of the Government Contacts Committee. This is becoming a very important part of the Aviation Lighting Committee meetings. Topics covered in the papers presented were:

Lighting of the Lod Airport in Israel by Joseph C. Landon
Uninterruptible Power Systems by Mr. Wallace of Powertronic Corporation in Toronto
Retroreflective Taxiway Guidance Signs by John Haney of Crouse-Hinds Company
New Design of Edge Lights, by Bob Lambert of Connecticut International Corporation.
Fully Flush Runway Lights by Fritz Brummer of Switzerland
Diachroic Films for Airport Lighting by Ed Beal of Connecticut International Corp.

1972

They originally intended to have a May meeting in Atlanta, Georgia but the airport construction was delayed, so the meeting was postponed until October when the new airport would be available for inspection. Des Callaghan was the chairman. Attendance was 111 people, besides the wives. At this meeting, Ernie Yost of Kopp Glass Company gave a full discussion of the advantages and limitations of pressed glass fro airport lighting fixtures. Another subject of considerable importance was the necessity of having frangible mounting for approach lighting. It was decided that hereafter one meeting per year would be enough to meet the needs of the industry.

1973

No records available to the author for this year.

1974

The 1974 meeting was held in Chicago in October at the O'Hare Inn. The Government Contracts Committee met on Tuesday, October 15, with John Haney of Crouse-Hinds presiding. There were 43 attendees. Clem McDonald reported on the progress being made in the setting of standards for lighting transformers that would be acceptable to the FAA, Air Force, Army, and the Navy. This effort began in 1973 and was getting general approval. Previously each body had its own specification which differed in some aspects. The similar effort to standardize on regulators had not made much progress. John Chan and Norman Hall of the Canadian Department of Transportation discussion the progress of the Montreal Airport.

Carl Eck of the Airline Pilots Association discussion the pilots needs and desires in airport lighting. For the FAA, Robert Bates discussed use of strobe lights for Lead-In Lights and for Runway End Identifiers (REIL). Clessen McDonald described the specs for frangible structures for approach lights. Peter Yurcisin discussion lighting problems on land fields and on carriers and brought up the subject of helicopter landing on nonair vessels. The general meeting of the Aviation Lighting Committee was opened by Clem McDonald, the Chairman. Mr. Jack Bowen, the Deputy Commissioner of Aviation for the City of Chicago gave a welcoming speech. Perry Thrasher of GE discussed by R.L. Booker of the National Bureau of Standards. Changes in approach light requirements were discussed by Robert Bates of FAA and testing of frangible structures by Mr. Charles Laible. The Thursday morning session covered the following: Navy helicopter program for non-aviation ships discussed by Meyer Colander. The new GAIL light was presented by Mike Mongoven of Multi Electric. Mr. Paul Shaver and Mr. James Reed gave an outline of what would be seen at the visit in the afternoon to O'Hare Field where an overlay project was being performed. Thursday afternoon included a visit to O'Hare, the world's busiest airport, inspection of the electrical maintenance shop, observation of the runway overlay project and method of installing semi-flush runway lights, visit to the O'Hare tower. Next was a visit to Meigs Field, a lake-front general aviation airport operated by the city. On the way from Meigs Field to La Tour Restaurant, we made stops at the Sears Tower, the First National Plaza and the Chicago Civic Center. After cocktails at La Tour, out dinner included a talk by the Aviation Commissioner of Chicago, Mr. William E. Downes. We had access to the roof top to view the night lights of the city.

The Friday morning session had talks on Visual Guidance Program by Mr. Frank McKinkie of the Transportation System Center in Cambridge, Massachusetts. Apron Guidance Lights by Norm Hall of the Canadian MOT Area Lighting of Dallas – Fort Worth Airport by John Haney of Crouse-Hinds. A Lead-in system installed at Aspen, Colorado by Del Keech of FAA.

1975

The Aviation Lighting Committee went back to Atlantic City for 1975. As usual at this location, attendance was heavy, 111 people.

The Government Contracts Committee meeting had 58 attendees.

Clem McDonald was still chairman and the meeting was held at the Holiday Inn in Atlantic City. The Government Contracts Committee met on Tuesday with Art Schai presiding. Wednesday was devoted to papers mainly on ground lighting and the control of planes on the ground. Radio and remote control of airport lighting was becoming of interest for smaller airports. The final presentation on Wednesday was a panel discussion on methods of installation of centerline lights on runways and in taxiways led by Art Schai. It was one of the most important segments of the symposium because, by this time a number of centerline installations had been made and the engineers involved could testify to their procedures. Thursday morning was devoted to more ground control discussion and the ground control installed at Mirabel Airport in Montreal. The afternoon included an inspector tour of NAFEC. It ended with a trip to Zaberer's Restaurant for cocktails and fine dinner. Congressman William J. Hughes, who represents the Atlantic City area, spoke of the importance of NAFEC to the aviation industry and to the Atlantic City Region. It is interesting to reflect that Atlantic City was selected because it was a little used airport on account of the demise of the Boardwalk Beach hotels. There was then very little air traffic. The introduction of casino gambling has certainly changed this. Friday morning was devoted to papers on tower controls of the airport lighting. A paper on dichroic color filters was also presented. The symposium was adjourned at noon.

1976

The 1976 meeting of Aviation Lighting Committee of the Illuminating Lighting Society was held in Tampa, Florida with John Haney of Crouse-Hinds Company presiding. On Tuesday, October 26, the Government Contracts Sub-Committee met. Robert Lambert, the vice-chairman of the main committee was chairman of this sub-committee. Renato Berzolla from the Port Authority of New York and New Jersey gave a report on the developments at the Kennedy and New York Airports.

Clessen Mc Donald, from the Washington office of FAA, gave reports of the developments toward:

- 1 Remote radio control of MALSR systems.
- 2 Conversion of ALSF I to SSALR.
- 3 6850.2 Visual Guidance Lighting System – Beginning Coordination.
- 4 Low impact Resistance structures for Approach Lights.
- 5 Higher standards on Maintainability on Reliability.
- 6 Monitoring maintenance operations.

Robert Bates, of the FAA Airport Services, discussed the Advisory Circulars which had been recently issued and the program to develop new handbooks that would incorporate all Advisory Circulars and also a Maintenance Handbook.

Norm Hall, of the Canadian Department of Transportation discussed aviation lighting developments north of the border.

Walter Fisher, of FAA Research and Development, discussed:

- 1 Lights for Turf Runways
- 2 Threshold marker lights for MALSR, MALS, and MALSF.
- 3 Low cost Visual Approach Indicators (VASI).

Leon Reamer from NAFWC spoke about the problems of changing specifications.

Peter Yurcisin talked about Navy efforts on land-based airfields, carriers and landing pads on non-aviation vessels. Wednesday morning October 27, the regular committee was called to order by John Haney. The new ADAP Program was explained by Mr. William Vitale of FAA. Airport Ground Traffic and its monitoring and control was the main topic of the session. In the afternoon, Bob Gates gave a report on ICAO meeting at Montreal.

The Thursday session was devoted to approach lighting, frangible masts for the same, and explanation of what would be seen at the Tampa International Airport in the afternoon. An evening cocktail hour and dinner at the Hawaiian Village completed the day.

Friday morning included three papers by Reigh Dennis, Des Callaghan and Norm Hall three of our members from Canada.

The final discussion was the new Space Shuttle runway at Cape Canaveral. The meeting adjourned at noon.

1977

John Haney of Crouse-Hinds was the chairman of the chairman of the 1977 symposium, which was held at La Jolla, California at the Sea Lodge in that city. Attendance was 84 people. This city's proximity to Tijuana, Mexico and Miramar Naval Air Station was part of the attraction for this meeting.

Tuesday, October 18th was taken up with the Executive Committee and the Government Contracts Committee Meetings. The Wednesday morning session included a discussion by Bob Bates of FAA about the coordination of FAA specification with the increasingly important ICAO requirements. An intensive discussion on microwave landing systems by FAA's James Tracy and a review of frangible towers for approach light systems filled out the program.

In the afternoon, Pilot Radio Control of airfield lighting was discussed. Lighting and voltage surge protection, improvement of specifications for cable and transformers were topics covered Thursday. Maintenance was the theme of the talks given in the morning session. The afternoon had a trip and inspection of the airfield installations at Miramar Naval Air Station. The customary cocktail session and dinner at the Sea Lodge followed.

Friday morning was devoted to: NAVAIR specifications and standards program by Peter Yercusin VMC and IMC lighting Heliports, by Des Callaghan of Canada. RVR and Ceiling heights relation to operation of Airports Lights was discussed extensively by Charles Douglas. A system design criterion for solid state regulators was the subject of a talk by Paul Anderson of Connecticut International Company. Ground traffic control was the subject of a panel discussion.

1978

Although the executive committee at the 1977 La Jolla meeting had been selected Williamsburg, Virginia as the site of the 1978 symposium, this decision was changed and the meeting was held at Galveston, Texas. The reason was its proximity to Houston and the new NASA Shuttle development. We were also able to see the connecting gear for the joint USA and Soviet meeting in space. Art Schai was chairman of the meeting, and Clem McDonald chaired the sub-committee on Government Contacts. Attendance was 66, not counting spouses. J.M. West of the Department of Transport Canada announced that Canada was adopting a 4 box VASI as standard and also said that they were going to test out the new British PAPI system. This was the first heard of the now international standard system. Five representatives of the FAA covered developments. Peterson covered navy developments and hopes. Wednesday, October 13, saw the presentation of only eight papers. David Terrell discussed the use of cross-linking to produce heat shrinkable parts. Carl F. Eck of the Airline Pilots Association gave a very fine discussion of what his organization felt were the necessary lighting arrangements for commercial airline operations. John Simeroth of the FAA described the Visual Guidance needs for category IIIB operations. William O. Collins of the Maryland State Aviation Administration presented a new concept in Visual Landing Aids. Robert K. Hawkins, a Consulting Engineer from Shreveport, Louisiana, spoke about the problems involved in installing in-pavement lights in a runway that had to be kept operating from 6:30am to 10:30pm everyday.

Peter Yurcisin, of the Naval Air Systems Command, proposed standardization for Helicopter Facility marking and lighting. Gerald Waterfall covered the latest concepts of installation of transformer bases and conduit systems. Renato Berzolla of the Port Authority covered Field Lighting Control Panels: yesterday, today, tomorrow. Thursday was spent at NASA.

1979

Jekyll, Georgia was the site of the 1979 Airport Lighting Meeting. Art Schai was the chairman and the attendance was 58, not counting spouses. It may be interesting at this point to analyze what organizations were represented and who were these individuals.

Of the government people:

- FAA had 5: Blankenship, Blunk, Goldenburg, Paprocki and Viohl.
- Air Force had 2: Carlson and Werdel.
- Navy had 5: Apriletti, Ferraglio, Geiger, Worden, and Yurcisin
- Port Authority of NY & NJ had only one: Berzolla.
- Canada sent 4 people:
 - Callaghan, from the Department of Defense
 - Campbell and Hudek, from Westinghouse of Canada
 - Sharp, from Black and McDonald (a contractor)
- Israel was represented by Joe Lanon and Goldreich
- State aviation authorities sent Ellis from Iowa, Johnson from Minnesota, Owens from Missouri, Will from Florida and Pete Contos was from Chicago, Illinois

There were 15 manufacturing firms represented:

- Crouse-Hinds and Sepco had 4 people: Ford, Bishop, Lambert and Tauber.
- Westinghouse USA had three: Contois, Murkily, and Murky.
- General Electric had only Perry Thrasher.
- ADB was represented by Don Renner, Al Mundschenk and J.R. Plas from Belgium.
- Jaquith Company by Don Jaquith and Curt Brunner
- Hevi Duty Electric sent Richard Godwin
- Flash Technology represented by Fred Gronberg
- Universe Inc. sent W.E. Henninger
- Hughly and Phillis had Robert Horner present.
- Standard Signs sent Steve Messner
- Multi Electric Manufacturing sent Clem McDonald
- Airport Lighting Company by Dennis Smith
- Amerace Ltd. Represented by Peter Tyler
- GTE Sylvania by Steward Willets
- Kopp Glass represented by Ernest Yost

Consultants present were:

- Aristotle Colidas
- Charles Fenner of Fenner St. John and Associates
- James A. Kriss of Stlte, Stevenson, Valur and Knecht Inc.
- Robert Jensen and Paul McGeorge of W.S. Kirkpatrick Intl.
- Scott Mitchell of Kilkeary, Scott and Associates
- Robert Moore of A.T.C. International
- Arthur and William Schai of Schai Associates

Construction Contractors:

- Ronald Griggs of Runway Coring and Supplies Inc.
- Maxim Airfield Lighting Systems, George Hretsina

Discussions at the Government Contract meeting was largely concerned with the Navy and Marine requirements for lighting due to new types of aircrafts coming into use. Testing of the PAPI

(Precision Approach Path Indicator) was announced as ICAO is considering it as an international standard. At the main committee meeting, three papers were on visual landing aids for helicopters and VTOLS both on land and on ships. Four papers concerned Installation and Maintenance of in-pavement runway lights. Vapor capsules were evaluated by V.G. Greaziano. A new approach to Zenon Flashing Lights was discussed by Jean Plas. A sub-committee NASAO/IES-IES reported on the status and problems of general aviation airports.

CHAPTER 6: COMMITTEE IN THE EIGHTIES

1980

The 1980 seminar of the Aviation Lighting Committee of the newly named Illuminating Engineering Society of North America was held from November 17 to 21 at Key West, Florida. The Naval Air Station there had been the winter vacation place for President Truman. Larry Smith was the chairman, beginning a new program of one year term for this office. The change of name for the Illuminating Engineering Society was a deserved recognition of the continued and increased participation of our Canadian confreres in the activities of the society. The Government Contacts meeting was opened by Scott Mitchel who welcomed thirty-seven attendees consisting of eleven government activities, ten manufacturers and five consulting firms. Rudy Viohl of FAA and Peter Yurcisin of the Navy gave reports on the programs of their respective agencies. Norm Hall from the Department of Transport and Des Callaghan from the Department of Defense of Canada discussed the need of establishing uniformity in specifications and standards between NATO, FAA and ICAO. The Precision Approach Path Indicator (PAPI) is being tested in Canada. Perhaps the most interesting part of the Government Contacts Committee was the presentation of K.J. Will about the status of general aviation landing fields and airports for general aviation. There are in the US literally thousands of such facilities and the NASAO/IES subcommittee has been established to define the needs for visual aids in these places. Art Schai and Rudy Viohl presented a paper on the history of the development of frangible structures for approach lighting systems. E.A. Alf of Canada discussed the Installation and Evaluation of the PAPI by Canadian authorities. A possible competitor of the PAPI called the PLASI was discussed in a paper by Gilbert Devore. Discussion of Navy Carrier Lighting by Capt. Richard Allsopp was followed by a paper on Vertical Take Off and Landing (VTOL) was co-authored by W. Scott Mitchell and Charles A. Douglas. N.E. Hudek spoke about a new concept of a self contained prefabricated airfield lighting control center.

1981

The 1981 Aviation Lighting Seminar was held November 9th thru 13th in Williamsburg, Virginia. This location has many historical attractions. It was the site of the Virginia colonial government and it was also close to the site of the last battle of the Revolutionary War at Yorktown and to the Norfolk Navy Shipyard. These attractions somewhat diminished the attention of the membership to the fine technical papers presented. The Government Contacts Sub-Committee meeting was convened by Scott Mitchell its chairman at 2:00pm on November 9th. There were 47 attendees, 15 represented government agencies, 24 from manufacturing companies and 8 from consultants. Robert Bates summarized the year's developments by the FAA. Peter Yurcisin outlined the efforts of the Navy to procure standardization of lighting with NATO, the Interamerican Standards Committee and ICAO. Emphasis is on Heliport landing facilities on vessels other than Aircraft Carriers. E.J. Alf of Canadian Department of Transport discussed developments in our northern neighbor. It was recognized that their colder temperatures presented problems that were less troublesome in the USA. On Wednesday, November 10th the general meeting was called to order by the Chairman, Stuart Ford. Attendance totaled 82 people. An extended presentation by Mr. Alf of the developments and problems of Visual Aids in Canada was made. James Forgas, Staff Engineer of the Airline Pilots Association, indicated that the ALPA approved of frangible supports for Approach Lighting Systems, and thought also that conspicuity of thresholds should be improved and believed the new PAPI was an improvement over the VASI. A.J. Smith of the Royal Aircraft Establishment in Bedford, England, Discussed the development of the PAPI which was originally

developed for STOL aircraft operations. In 1976, it was first proposed as a replacement for VASI. It is now expected that ICAO will recommend its adoption as an international standard in 1982. Chester S. Pieroway from Wright-Patterson presented a paper on Electro-luminescent light fixtures. W.C. Remini from the US Department of energy spoke on Radioisotope powered Light sources. An overview of current Air-Force Standard practice in Airfield lighting was presented by 1. Paul Weaver of the Directorate of Engineering and Services of the AF in Washington. Mr. Peter Yurcisin of the Naval Air Systems Command in Washington DC discussed the Lighting standards now in use and the increased development of Soviet naval power in the "Cold War". The fundamental characteristic of the isolating transformers used in Airport Lighting circuits was discussed and Renato Berzolla of the Crouse-Hinds Corp. Stephen A. Messner of the Standard Sign Company presented a New Family of Taxiway Guidance Signs. Art Schai gave an update on frangible towers. Larry Smith of Tampa International Airport talked about a new problem: the inadvertent entry of aircraft onto runways, and how to use lights to prevent such occurrences. Peter Contos from the Chicago Department of Public Works discussed the Apron and Ramp Lighting at Chicago O'Hare Airport. Thursday provided a visit to the Norfolk Naval Shipyard where one of the big Aircraft Carriers had just returned to its home port after a long cruise overseas. We witnessed the reunion of sailors with their spouses and children. The carriers are truly big ships.

1982

It should be mentioned that these seminars did not occur without a great deal of planning by the Executive Committee, we met in May or June at the FAA building in Washington, DC. This was usually a one day session. The Executive Committee for 1982 consisted of the general Chairman Norman Winterveen, of the consulting firm Greiner Engineering Sciences, Inc. of Tampa Florida; Vice-chairman was Lee Campbell from Westinghouse Canada. Other members were Glen Geiger of the Naval Facilities Engineering Command, Don Jacquith and Henry Wenson as Co-Treasurers, Seward Ford past Chairman in 1981, and three chairmen of three sub Committees: Scott Mitchell of the Government Contacts sub Committee, Mac McIver of the NASAO-IES Joint committee on Landing Aids, and Larry Smith of the Awards subcommittee. We also had the IES Handbook Review sub committee chaired by Renato Berzollo of Crouse Hinds. And, finally, we had a sub-committee on Recommended Practices chaired by Peter Contos of the Department of Public Works of Chicago. Since McIver was from the Washington State, Division of Aeronautics, it was at his suggestion that the 1982 Seminar was held in Seattle. The subjects discussed centered on the problem of making sure that planes did not get on the runways from taxiways when other planes were either taking off or landing. There were extensive discussions on the problems of rehabbing the airports in the territory given to Israel by Egypt as a result of the Camp David agreements between the two countries. Improvements in controls and displays and monitoring of the status of runway lighting systems were also discussed. The side trips included a boat trip on Puget Sound and a tour of the Boeing Aircraft Plant.

1983

The 1983 Aviation Lighting Seminar was held at Toronto, Ontario, Canada, from October 4 to 7th. Len Campbell of Westinghouse Canada was the General Chairman. Glen Geiger of Greshan & Geiger Inc., was Technical Program Chairman and Peter Tyler of Amerace Ltd, was Facilities and Entertainment Chairman. 79 people attended the Seminar and the 58 of them were at the Government Contacts meeting. The Government Contacts Cub Committee had the usual presentation from the FAA on progress and plans from Robert Bates. Ed Alf of Transport Canada gave a report on Programs being tested in his area. Col, Olson of the US Air Force talked about the need of portable lighting equipment. Tony Hendricks of the Navy Dept. indicated that the Navy was

tending to adopt FAA specifications and equipment. Peter Contos of Chicago spoke on the plans for development of O'Hare and Midway airports. The general meeting had two very interesting talks on measurement of Colors and the nature of glass filters by Kenneth Miller of the Photo Research Division of Kolmorgan Corporation and Ernie Yost of Kopp Glass Co. respectively. Tom Poprocki from NAFEC gave complete discussion of programs and progress at the National Air Facilities Experimental Center. The Precision Approach Path Indicator (PAPI) was soon may displace the VASI as the international standard. It is being intensively studied by ICAO and FAA. Other topics discussed were: Feeding power to fluorescent lamps from series circuits, LED and Lazar Electroluminescent Lighting, Remote and Self contained Units for Hazard Beacons. The Highlight of the meeting was Wednesday evening's trip to Niagara Falls to view the night lighting of the falls from the dining room of the Skylon Tower.

1984

The 1984 Aviation Lighting Seminar was held in Charleston, South Carolina, August 15 to 17; M. J. McIver was Chairman of the General Conference. Scott Mitchell was Chairman of the Government Contacts Sub-Committee. Glen Geiger and his wife were responsible for the program for our spouses and guests. McIver, in addition to his responsibilities as general chairman, was the chairman of the NASAO/IES subcommittee; a group that helps keeps the State Departments of Aviation in touch with the National standards of the FAA. There were 87 attendees and 23 papers were scheduled to be presented but some of them were not given. However, 5 were discussed were efforts to provide light at remote locations such as Bush stations in Alaska and northern Canada. These covered Radio luminescent light fixtures and retro-reflective markers and a report on the system used by Arco Petroleum Co. in providing airfields for servicing the Prudoe Bay oil fields. While the standard tungsten filament lamp has been almost universally used for airport lighting, several possible alternative light sources were discussed by George English and William Staubitz of the GTE Lighting Research and Development plant at Danvers Mass. Another important paper was given by Ed Alf of Canada Transport on power supplies for remote and inaccessible beacons or air strips. Des Callaghan spoke on the requirement that exist for Portable Airfield Lighting Systems for High Performance Aircraft. His specifications were quite similar to the specifications set up some years later by the US Air Force for the Contingency Airfield Lighting Systems (CALs). Two papers were presented dealing with the problems and solutions encountered in installing semi-flush runway lights. Stop Lights and Hold Line light bars were another subject discussed.

1985

Denver, Colorado, the "Mile High City", was the site of the 1985 general meeting of the Aviation Lighting Committee of the IES of North America. This site was chosen because it was the location of the newest and biggest airport being built US M.J. McIver was the General Chairman, Donald Jaquith was Vice-Chairman and acting secretary and Fred Gronberg was the Treasurer. The Executive Tower Inn was the location in Denver. Dick Markley handled the local arrangements and the Ladies Program. 87 people registered for this conference and 57 attended the Government Contacts Sub Committee meeting. Although 19 technical papers were scheduled, several were not reported in the published report. Renato Berzolla of Crouse Hinds discussed the total lifetime costs of an Airport lighting System. Category III operations at The Frankfurt Germany Airport were reported at length by Wolfgang Oberlist from Germany. George Godfrey of Godfrey Engineering discussed the development of a dual mode ALSF II system or the FAA. Al Gregaitis of the Great Lakes Region of the FAA presented a very helpful paper on how to make maintenance easier in Airport Lighting Systems. David Haase presented the views of the Airline Pilots Association on the importance of Distance Remaining Signs to the pilots of commercial air craft. The Wednesday

session covered talks on Solar Power Technology, Infrared Security Floodlighting, and new Sign Lighting Standards. Mike Mongoven of Multi Electric gave a talk on monitoring the status of runway lighting circuits to give warning when a pre-set number of lights were in that circuit were not operating. Runway sensor systems for operating Stop Bar lights were discussed by J. Waldman of Surface Systems Inc. Alternate light sources, different kinds of lamps, were discussed by Bob Addy of the Michigan Aeronautics Commission. Finally, R. Robinson, of Devore Aviation, talked about the Plasi units, a proposed Slope Indicator System.

1986

The 1986 Aviation Committee Conference was held September 23 at Grand Forks, North Dakota, at the invitation of the University of North Dakota in that city. Donald Jaquith of Jaquith Industries was Chairman. The Committee now has five active sub-committees as follows:

Aviation Government Contact	Steven Messner, Chairman
NASAO/IES JOINT ON VISUAL AIDS	M.J. McIver, Chairman
Aviation Handbook Review	Renato Berzolla, Chairman
Aviation Recommended Practice	Norman Witteveen, Chairman
Aviation Awards	Lawrence Smith, Chairman

At this meeting the Awards Committee made the following citations

:

In the General Aviation category to Mekoryuk Airport in Nunivak Island, Alaska,
In the Air Carrier category to the Hunstville-Madison County, Alabama Airport.

BEST TECHNICAL PRESENTATION AWARDS were made to Ed. Chalom for paper on "JFK Stop Bar Installations", Ian Lewin for paper on "Computer Simulation for Optical Design", Malcolm McIver for paper on "General Aviation Airports Lighting Problems", Harold Olson for paper on "runaway Incursion Report". Improvement reports were presented on "Remote Control Systems" by George Godfrey "Lightning as it relates to Airport Lighting Systems" by L.A. Fisher, "Micro-Processor based Interfaces for Radio Photo Electrical Controlled G.A. Airports" By W. Brian Poykko.

1987

The Aviation Committee Conference of 1987 was held in Boston, Mass. beginning on October 15th. Fred Gronberg was the Chairman. The Government Contacts sub-Committee meeting was attended by 55 persons. This part of the conference always is one of the most important. This meeting was chaired by Steven Messner. The FAA situation updates were given by Phil Tomzik, Art Prigal, Tom Poprocki, and Lynn Jackson. Military updates were provided by John Simeroth for the Navy and Bill Corsetti for the Air Force. The Air Force is very interested in the development of the Portable Airport Lighting Systems for operation in a war time environment and for the shipment and installation at remote locations. Fred Becker of Transport Canada reported that Canada has adopted PAPI's as standard but will not replace already installed VASI's. Doug Johnson of Minnesota spoke of a state inspection program for general aviation airports. At the General meeting Paul Jones of the FAA Technical Center spoke on the development work being done on IFR operation of Heliports. Brian Johnson gave a description of new City of London Stolport, being established in Central London using short takeoff and landing aircraft. (STOL) Goran Ericksson from the Swedish Board of Civil Aviation gave a report and showed a video showing developments in that country. There were a number of presentations for which the copies did not arrive in time for printing. A

distinguished Service Award was made to Arthur S. Schai at the dinner concluding this Conference. Aviation lighting Improvement Awards were made to the Theodore Francis Green State Airport at Warwick Rhode Island and to Vandenberg Airport in Hillsboro County, Florida.

1988

The 1988 Aviation Lighting Conference was held in Washington, D.C. on October 10th to 13th. The Rosslyn West Park Hotel in Arlington, Va. was the meeting place. Scott Mitchell was chairman. Attendance at this conference was 88 people and at the Government Contact Sub-Committee meeting was 48. This smaller interest was probably due to the meeting being held in the afternoon of the last day. Two significant Awards were made to the co-inventors of the PAPI system. These gentlemen were Anthony Smith and David Johnson, members of the Royal Aircraft Establishment in United Kingdom. It is noteworthy that, in addition to these two, attendees included Brian Johnson from UK, Bernard Laduron and Etienne Toussaint from Belgium, Rolf Norman from Sweden and Max Harlacher from Switzerland. Canada of course, provided many attendees. The Awards Sub committee also made a Best Paper Award to Anthony Smith and Honorable Mention Awards to David J. Hasse of ALPA and Dr. Ian Lewin of Lighting Sciences Inc. At the Governments Contact Sub-Committee Meeting, the chairman Steve Messner introduced Mr. Leonard Mudd who is Director of Airport Standards for the FAA. He spoke of the growing concern about Runway Incursions and the improvement needed in signs on Airports. Updates on FAA operations were provided by Ben Castelano, Lan Duong, Art Prigal, Tom Poprocki, and Lynn Jackson. Jim Meade spoke for the Army, John Simeroth for the Navy, and Bill Corsetti for the Air Force.

1989

The Aviation Lighting Conference for this year was held on October 23rd to 27th in Scottsdale, Arizona at the Embassy Suites Hotel.

W. Scott Mitchell was the Committee Chairman. Tom Propocki and Dr. Ian Lewin arranged for and managed the entire Scottsdale Conference and Guest Program. There were 102 attendees at the general conference and 48 at the Government Contact Sub-Committee meeting. The Government Contacts Sub-Committee had updates on FAA programs from Ms. Retta Cameron, Art Prigal, Tom Propocki from the Technical Center, and Peter Keefe. The military representatives were James Meade for the Army, Don Raman for the Navy, Rod Resy and Chuck Purcell for the Air Force. Peter Sawatzky gave a report on Canadian programs. The Airline Pilots Association position was presented by Capt. Hasse. ALPA is greatly concerned about Runway incursions and Stop-Bar developments. The Awards Committee had no Airport improvement awards but made a best paper award to David Shemwell for his presentation on "Applications of Lasers in Visual Landing Aids". Honorable Mention awards were made to Seward Ford, Kaiser, and Art Schai. Several papers presented the problems of Lightning, Insulation Resistance and Counterpoises and other shielding schemes. There were two papers on Helipads. There was one paper from the Eastern FAA Region recommending consultation with the Airport Electricians to get the low-down on qualities of equipment. At the business meeting Mr. Michael Mongoven was chosen to be the Chairman for 1990, and he announced that the 1990 Conference would be held in Chicago.

This is as far as this author can go.

CHAPTER 6 COMMITTEE IN THE NINETIES

1990

The 1990 Conference for Aviation Lighting was held in Chicago this year with Chairman, Mike Mongoven, Vice Chairman, Brian Johnson and John Neppel, Secretary, Gayle Gorman-Freeman and Treasurer Mike Borta. The conference had 66 attendees with the Best Paper Awards to David Shemwell, "Laser Visual Aids" and Goran Backstrom "A New Way to Control and Monitor Airfield Lights". This represents the first time that laser technology was applied to visual aids and the development of individual light monitors for airfield lighting. The General Aviation Lighting Improvement Award went to Jefferson County International Airport. There was no award for Air Carrier. Transport Canada indicated that they would be going to the third party certified the same as in the U.S. The City of Chicago made their recommendations for a third airport at Lake Calumet rather than the Peotone Site. A special section of the conference was devoted to the regulatory process by Nathaniel H. Goodrich. The Swedish presentation of SMGC started the development of new fixtures and discussion that will last for the next 8 years. The development of the Contingency Airfield Lighting System was started and provides a complete 10,000 foot runway with two approach systems, including PAPI and Strobe, and taxiway for the US Air Force. Other topics of interest were grounding, glass frangibility and encapsulation compounds.

1991

The 1991 Conference was held for the first time outside the North American Continent. This year, the IES Aviation Lighting Committee went to London England to encourage their counterparts to join the group with Chairman Mike Mongoven, Vice Chairman Mike Borta, Secretary Gayle Gorman-Freeman and Treasurer, Peter Tyler. A total of 74 individuals including 34 from Europe made presentations covering the Airport Guidance, SMGS, Portable Lighting for Airfields, Reliability of Airfield Lighting, Heliport Lighting, Smart Power and interfaces of light fixture from masts to bases to connectors. The awards for Smart Power were shared by Goran Ericksson, "SMGC and Stop Bar Control" and George Godfrey, "Control Systems at Airports". A special meeting of the European Lighting Group was presented to the President of the IES, Jerry White, who attended this meeting. A special tour of the Bedford Royal Aerospace Establishment was arranged for all attending the meeting. The meeting was held at the Sterling Hotel Heathrow just a short walk from terminal three at Heathrow. The function of this meeting was to get together all interested in airfield lighting and to present various ideas that had been tried or new ideas that should be tried in the future. To that end, the meeting was very successful. Several individuals are presently meeting to write specifications for the IEC on Airfield Lighting.

1992

The 1992 Conference was held in San Antonio, Texas, with Chairman Mike Borta, Vice Chairman, Gayle Gorman-Freeman, Secretary, Paul Jones and Treasurer, Jess Howard. A total of 84 members attended this conference at the Embassy Suites with a visit to Randolph Air Force Base and simulators. The Best Paper Awards were presented to Mark Ryer, "Touch Screen Control" and Goran Backstrom, "New Techniques for Control and Monitoring of Airfield Lights". The FAA announced a new advisory circular on Surface Movement Guidance and Control Systems (SMGCS) had been released and the plan was to form working groups to implement this guidance. The SMGCS AC created the need for Stop Bars and additional fixtures that would be included in revision of the present advisory circulars. The first indication of the use of Global Position Satellite was

mentioned by Gary Skillicorn of FAA ANN200. Testing was being conducted at JFK and Seattle on Stop Bars and this information will result in development of specifications for the required fixtures. Topics of interest revolved around Control and Monitoring of airfield lighting, the development of stop bars and the first use of lighting for a space station and requirements for General Aviation.

1993

The 1993 Conference was held in San Francisco, California with Chairman, Gayle Gorman-Freeman, Vice Chairman Paul Jones, Secretary Bill Schai and Treasure, Jesse Howard. The location of California contributes to the increase to 92 attendees at this conference. The Best Paper Award went to M. J. McIver "Evolution of Airport Lighting in the Great State of Washington". The conference discussed the merits of regulators, grounding, lighting improvements at San Francisco, reduced power consumption, field measurement of light fixtures on airfields and review of ICAO, FAA and engineering standards for airfield lighting.

The technical aspect of lighting including design of light sources, color, reflectors, lenses and prisms was discussed in detail and a panel discussed the possibility of a completely flush light.

1994

The Conference was held at Halifax, Nova Scotia, with Chairman Paul Jones, Vice Chairman Bill Schai, Secretary Bill Pickell and Treasurer, Jesse Howard. A total of 66 individuals listened to Dr. Alexander Rizkin's "Approach Landing System Based on High Efficiency Optical Fiber Remote Lighting and Chuck Fehner's "The Greening of Airfield Lighting" received the Best Paper Awards. The conference discussed photometric evaluation of in pavement light fixtures, anchoring of these fixtures, monitoring of fixtures in low visibility, use of fiber optics for approach lighting, dichroic filters and surface movement at airfields. The emergence of new technology for either light sources or control lights by signals generated over the power circuit continued to interest all attendees. The presentation of a completely flush taxiway fixture again shows the advances made through engineering for airfield lighting.

1995

The 1995 conference was held in Salt Lake City, Utah. A record 110 members attended the meeting with Chairman Bill Schai, Vice Chairman Bill Pickell, Secretary Dan Geary, and Treasurer Jess Howard. The Best Paper Award went to Seward Ford "Integrated Comprehensive Control and Communications Network for the Aerodrome". This was the year that the First Annual IES Aviation Golf Tourney began. The golf outing together with the "icebreaker" got everyone together before the start of the meeting. The Air Carrier Award went to Kansas City International and the General Aviation Lighting Award went to Harrington Municipal Airport. The FAA reported that the A/C 150/5345-IU had been officially canceled and that third part certification was proceeding. The A/C on Land and Hold Short was in limbo awaiting Air Traffic Input. The US Navy indicated that the PAPI was being used to replace the FLOLS as a cost reduction program and the US Air Force is moving toward ICAO criteria. The topics of the meeting ranged from lessons learned from Denver International Airport to requirements of glass for use on fixtures in airfield lighting. The possibility of funding by the US Government for General Airports and R & D efforts of the FAA to reduce the approach zone contributed to the interest of all. SMGCS again was on the agenda and several different approaches were discussed during the sessions. An update of ICAO Aerodrome Design Manual Part 5 and Runway Incursions were also hot topics.

1996

The conference was held at Oklahoma City, OK. Chairman William Pickell picked Oklahoma City because of the closeness of the FAA Aeronautical Center. For the first time in many years, many logistic and engineering employees from the FAA were able to attend the IES ALC Meeting. The best papers were Don Gallagher “Approach Lighting Research and Development” and Ben Salter “Is Safety an Optional Extra”. Items for discussion were Evaluation of Airfield Lighting Systems and Monitoring. The first reference to physical evaluation of the airfield lighting systems by doing photometric infield testing for the edge and in-pavement lights. Two difference approaches using vehicles to travel down the runway and computer the intensities of each light and compare to the performance requirements.

1997

The conference was held in Louisville, Kentucky. A new record for attendance was reached when 158 members attended the meeting with Chairman Dan Geary, Vice Chairman Wayne Cook, Secretary Gene Barnes, and Treasurer Curt Brunner. The Best Paper Award went to Cory Stutz “SMGCS Switching and Controls”. The Government Contact Subcommittee reported that three advisory circulars were being updated; the Tech Center was evaluating the problems with signs at O’Hare and was using simulators to evaluate modified MALSR configurations. The Navy and the Army were completing their manuals for Airfield Lighting and the Air Force was writing a joint manual and expected to have it completed by late 1998. During this meeting, Goran Ericksson was presented with confirmation that his nomination for IES Fellow had been accepted. Other special items of interest were smart regulators, ICAO recommendations for CAT 1 Lighting, low visibility lighting, modified configuration for MALSR, SMGCS at Chek Lap Kok and Gatwick and Chromaticity and Transmission Properties of Aviation Signal Glasses.

1998

The conference was held in Albuquerque, New Mexico by Chairman Wayne Cook. The first time the internet was used for registration and a new user seminar was provided for the Airfield Electrical/Lighting Professionals. It was a huge success and provided an input for the airfield maintenance personnel. The topics ranged from Tony Smith’s look into the 21st Century lighting for AFL to photometric evaluations of in-pavement lights, in service photometric testing and CCR maintenance. The new topic was A-SMGCS and all weather taxiing.

1999

New Orleans, Louisiana was the site of our 71 first meeting hosted by Chairman, Gene Barnes. The User Group was given a full day slot for discussion of problems associated with airfield maintenance. LED’s took top center stage for the first time along with KcA deicer and its effect on electrical connection on the airfield. Art Schai delivered his Farewell address to the IESALC. The advent of switchgear regulators and load requirements for transformers and regulators were important topics. With the proper calculation of the loads, the sizing of the regulators could be performed by simple calculations and assure correct operation of the complete system. This was the first meeting that provided all attendees with a CD of the proceedings, a first for the 71 year old committee.

CHAPTER 7 COMMITTEE IN 21st CENTURY

2000

Orlando, Florida and a Technical Trip to Kennedy Space Center were the most memorable events by Chairman, Frank Kazienko. The members used the week-end before and after to visit Walt Disney World. Again, LED's for Aviation, Fiber Optics, LAAHSO and LAAS/DGPS were the topics of discussion. Discussions of ICAO photometric performances, metal halide technology for aviation lighting and the real world requirements vs. the required specifications drew interest from all members. The specifications were reviewed and there are possibilities for changes in the specification without any detriment to the lighting system we presently are using.

2001

Baljit Boparai was the Chairman for this years meeting that was held in San Diego, CA. The user group present paper for the first time and were included in the proceedings as official documents of the meeting. This meeting proved to be a meeting that concerned itself with reliability and advances in technology. A special paper was present by a member of the Israel Security Force concerning the safety procedures at Airports. This was received with great interest because of the recent air plane hijackings. The first reference to the new heavy aircraft on was discussed on the impact on Airfield Lighting Systems. The proposed new A 380 will require many changes to airports in the US. The FAA placed new requirements for runway incursions and the Runway Guard Light (RGL) specification was developed. The difference between ICAO and FAA was the focal point of these discussions. A special dinner speaker, Dr Syun Akasofu, renowned expert in auroral physics, provide an in-depth discussion on the most spectacular natural lighting phenomena on earth, the amazing Northern Lights.

Nashville, TN was the next venue for the IESALC under chairman, Wes Hazelton. From a new approach to the PAPI System to LED based L-810, L864 and Gate Guidance Systems. Gene Barnes provided information on the new Control and Monitoring Systems Specification. The second time a completely flush in-pavement taxiway light was discussed along with new Lighting Sources (Led) for Airport Lighting. A new development for snow areas for the protection of in-pavement lights was presented to the committee. For the third time a panel discussion on the use of Counterpoise/ Grounding was presented. The FAA determined that they would present a requirement for lightning protection for airports in their -30 specification.

2003

Austin, TX was therapeutic resting place for all for the next meeting. Both Wes Hazelton and Gene Barnes were co-chairman and they provide the greenest city in Texas for all to enjoy. Where you need to have 10 acres to feed one cow, we had 100 ft per attendee to enjoy the beauty of Lake Travis. The Users Group presented their first hands-on demonstration for maintenance. The Committee observed five minutes of silence for Shay Lean And Art Schai, both individuals made contributions to the IESALC and will be remembered by all. David Fox received the Shay Lean Technical Paper Award for the most important Technical Paper at the conference. His paper concerned the fundamentals of glass as applied to LED Technology. The final specification for Monitoring and Control of Airport Systems was presented to the committee by the FAA. This year was the very first IESALC Day Show and it was a great success. For six (6) hours, vendors were able to show their product and to demonstrate the importance of new and improved fixture for

airport lighting. The conference provided more information on the challenges and visibility of various airports in the US and also Europe compared to the general acceptable situations.

2004

2005

The 2005 Conference was cancelled due to a conflict with Hurricane Wilma, the 21st storm of the record 2005 hurricane season. The 2005 Conference was scheduled to be held at the Marriott Marina Hotel and Conference Center in Ft. Lauderdale, Florida from October 30th through November 3rd. On October 26th Hurricane Wilma (a Category 3 storm with 115 mph winds) caused damages in Florida estimated to exceed \$2 billion. The Marriott Marina received extensive damages and was shut down. After much discussion among Executive Committee members notice was sent out to registrants that the 2005 Conference was cancelled. Prior to its cancellation the conference was on track for over 200 attendees. Scheduled paper topics included LED lighting, solar technology, counterpoise, grounding, lightning protection, light installation practices, glass properties, NEC and FAA practices, area lighting in the airport environment and light pollution. The agenda included the User's Group forum and half day trade show. The 2005 officers consisted of Fred Loeffler, Chairman, Dave Fox, Vice Chairman; John Bogart, Secretary and Bill Schai, Treasurer. The Annual Executive Committee Meeting (normally held during the fall conference) was held on November 3, 2005 in Indianapolis. The Executive Committee discussed scheduling a 2006 Spring Conference based on the 2005 Fall Conference agenda. It was decided to formally cancel the 2005 conference and plan the 2006 Fall Conference with a clean slate. David and Dedra Rainey were nominated for incoming co- secretaries.

2006

The 2006 IESALC conference was held in Williamsburg, VA November 6th through 9th. The conference set a record for attendance, having 239 participants. Certainly, the cancelled conference of 2005 left many wanting to discuss emerging LED technologies. The lack of a European Interairport show contributed to our largest international attendance ever, and the close proximity to both military and FAA personnel led to increased participation of government. 2006 also marked a significant increase in participation by Universities, probably due to the close interaction of the FAA and contracted universities brought in to develop and understand emerging technologies. IESALC welcomed all to join these discussions.

The 2006 conference continued the dialog on LED technology, both in technical papers and displays at our dayshow. Ed Runyon of Siemens Airfield Solutions presented the "Best Paper" titled "Advances in LED Technology." Discussion also centered on the practical performance of installed equipment. The "Honorable Mention" Paper and "Lean Award" winner was a paper presented by Doron Lean titled "Effects of Installation Tolerances on Pilot's Perception of Photometrics." Finally, there was much discussion both in the technical papers and a panel discussion regarding the FAA requirements versus the National Electric Code.

The Air Carrier award was presented to BWI, Baltimore/Washington International Thurgood Marshall Airport.

2007

There were many developments and introductions of new technologies in 2007. The hot topics of the year were showcased at the Annual Fall Conference held in Oak Brook (Chicago), IL from October 29th thru November 1st. The first day of the conference was dedicated to the User's Group (Airport Electrical Supervisors) and dealt with the issues common to their operations. The conference opened with a presentation of the global view of airfield lighting. Papers were given on the new vault installed at Logan – Boston, safety for electrical maintenance personnel and stand by power systems for airfield lighting. A User's Group Forum was assembled and open discussions were conducted regarding L868 Base Can Bolts, L824 Cable, Potassium Acetate, Megger Testing, Vault Design, L823 Primary Connector Kits, Stop Bar Control and the development of a Lighting Repairs database.

Two days were dedicated to papers regarding newer technologies being reviewed in our industry. Papers were given on alternate systems for guidance approaches, color correction of white LED lights, apron flood lighting, new photometric measuring devices, Infrared sources for LED Approach Lighting systems, glass lens design for Obstruction Lighting, LED system test matching linear steps – fixtures to regulators, Laser Technology – Wall of Light, new systems for A-SMGCS and GPS / GIS for airfield electrical inspection and maintenance.

There were papers given on the progress of the O'Hare Modernization Project (OMP) – the construction of 4 new runways and extension of 2 existing runways. The OMP project is the largest in airfield lighting history and a paper was given on the 4R – 22L Rehab project. A paper was also given that updated the progress to date and laid out the plans for construction for upcoming years. The conference was highlighted with a tour of the OMP project. It marked the first time the IES ALC group had been on an airport runway since the security changes were promulgated from terrorist attacks. The tour was narrated by O'Hare Dept. of Aviation staff and was an excellent opportunity for industry stakeholders to see their products and technologies used in application on a grand scale.

One of the major highlights of the conference was the presentation of a "Lifetime Achievement Award" to Bill Schai of Jaquith Industries. Bill is the Treasurer of the IESALC and has worked diligently for more than 25 years to improve the committee. Bill received this much deserved, and probably long overdue award to a standing ovation.

2008

The IESALC had a very interesting and successful year. The annual Fall Conference was held at the Peabody Hotel in Memphis Tennessee with over two hundred attendees and approximately 35 exhibitors for the day show. One of the hot topics for this year's conference was the effect of the use of LED based lighting on the new Enhanced Flight Vision Systems (EFVS) currently being installed in some airline's fleets. The EFVS utilizes infrared radiation to provide the pilot a view of the runway, runway lighting and surrounding terrain on a heads up display (HUD). The problem with the LED lighting is that it does not produce enough IR to be visible to the EFVS as opposed to traditional incandescent and tungsten halogen light sources.

Another subject that is expected to have a major impact on air travel is the FAA's NextGen program. A summary of how the system works and current progress was presented at the annual conference.

Also of note at the annual conference was the presentation of a Lifetime Achievement Award to Seward Ford for his past contributions to aviation lighting and continued work to promote the ideals and goals of the IESALC.

The spring executive committee meeting was held at Tamarack Lodge in Hungry Horse, Montana. This proved to be a good venue for a committee meeting with comfortable surroundings and much time for discussion of the issues presented to the committee.

A new Recommended Practices committee lead by Richard Larivee was working on the new RP37, Outdoor Lighting for the Airport Environment.

2009

The 2009 IESALC conference was held at the Hilton in Las Vegas, Nevada. This year conference saw a record of international attendees from over 25 countries and one of the most attended conferences to date.

There were a number of excellent papers presented this year from updates to the NexGen program and the Runway Status Lights (RWSL) program by the FAA to RDU's Green Initiatives. The FAA Technical Center (FAATC) presented a study on the impact of FOG to LED lights.

The Lean Award for best technical paper was "Reevaluating the Chromaticity Boundaries for Aviation White Light" given by Andrew Bierman, Lighting Research Center, RPI.

With the continued growth of LED products the introduction of the Electrical Infrastructure Research Team (EIRTs), a collaboration of the FAA and industry, were presented to the attendees. The committees' charter is to investigate and develop the future airport electrical infrastructure.

One of the fun highlights of the week was Blue Man Group Event where around 100 attendees enjoyed the show.

2010

2011

2012

Fall conference attendees enjoyed a beautiful beach setting October 14-18, 2012 at St. Pete Beach, FL. The conference, which had a new record level of attendees, continues to be seen as an increasingly vital industry resource.

Paper topics were generally based on current trends which included:

- Airfield design methods to reduce the risk of Runway Incursions.
- New LED based power supply architectures.
- Updates on Enhanced Flight Vision System (EFVS) activities

- Airfield lighting design and maintenance.

Papers were given on several of the electrical architectures being reviewed by the Electrical Infrastructure Research Team (EIRT) committee. This included the DC PWM system (as implemented in a solar application at False River, LA); the low current 2A series circuit system and the parallel system (as implemented at Charles de Gaulle (CDG) International airport in France).

Trends in LED technology included papers such as Solar-powered LED PAPIs and LED Apron Floodlighting

The Best Paper award was presented to J. Chad Stalker, Philips Lumileds for “Trends In LED Lighting.” This paper presented information on the quick evolution of high brightness LEDs, providing opportunities for implementation in higher brightness applications on the airfield. Also covered were issues with LED obsolescence and LED life testing.

The Honorable Mention paper award was presented to Doron Lean/Lean Photometrics for “Runway Safety Area Program at San Francisco International Airport.”

The 2012 Award For Excellence was for “Implementation of a Solar Powered Airfield Lighting Circuit/False River Regional Airport.” The Lighting Designer was Allen Taylor, LA DOTD. This award was given for the successful implementation of the world’s first all solar-powered airfield lighting system.

The 2012 Air Carrier Award was presented to Wicomico County Airport, Salisbury, MD. The Lighting Designer was Delta Airport Consultants.

2013

After three consecutive years of having the conference on the east coast of the United States, the 2013 IESALC Chair, Ken Lepera, was offered only one request when planning the 2013 Conference, ‘send the conference west’. The request leads the event to Tucson, Arizona, home of dark skies and the Saguaro Cactus. The 261 attendees and 36 exhibitors enjoyed clear sunny days and cool desert nights while staying in the Lowes Ventana Canyon Resort.

The Users Group discussed the proposition of Airfield Electricians maintaining a Certification to perform electrical work on the airfield. Area Light Fixture Manufacture Representatives, Designers, Pilots, and Airfield Maintenance Personnel then discussed the topic of light pollution and excessive light in a panel format to further RP-37 – Recommended Practice for Outdoor Lighting for the Airport Environment.

Technical sessions offered conference goers information on advancing technologies and research in the area of LED sources and equipment, cable connectors, and electrical transients just to name a few. Sessions also concentrated on concepts, practices and methods to better maintain aviation electrical components on airfields.

Attendees were also grateful to Donald Gallagher and Holly Cyris of the FAA who fought through 2013’s government shut downs, sequestration and budget cuts to present an Airport Safety Research and Development update from the William J. Hughes FAA Technical Center.

2013 IESALC Awards were as follows: The Best Paper Award went to Tim Mental, Mel Haywood, Geoff Kouril, and Pete Butler for their presentation on the Port Columbus International Airport, Runway 10R-28L Relocation Project. The Honorable Mention Paper went to Carl S. Johnson II who presented "The Good, The Vault and The Ugly", a presentation on the evolution of the Airfield Electrical Vault. The 2013 Air Carrier Award went to the Maryland Aviation Administration for the

BWI Thurgood Marshall International Airport, Runway Safety Area & Standards Compliance Program with Program Manager Alan Peljovich of JMT and Lighting Designers, URS Corporation. Finally a special General Aviation Subcommittee Recognition Award was delivered to Bill Schai, Mel Haywood, Joe Levraera and Mac McIver for their year of service to IESALC and the Industry.

The conference ended with a banquet and awards ceremony held at the PIMA Air and Space Museum where attendees dined and socialize in the shadows of historic aircraft such as the Lockheed SR-71 “Blackbird”, Grumman F-14A Tomcat, and North American P-51 Mustang.