Jörgen Skogh (June 1986) **Jörgen Skogh (July 14, 2013)**

Career:

After taking an engineering degree from STI in Stockholm, Sweden and after military service, I was hired by SAAB in 1949, where I stayed for seven years. The last five years or so I worked in the Structures Development Group under Olle Ljungström, one of three or four people who have had a major influence on me. One of my assignments there was to design a Boeing B-47, working from photographs. The idea was to project this aircraft some twenty years into the future and then develop a fighter that could bring that one down. We were surprised that the B-47 wing panels must be some 25 mm thick. The Mac 2 SAAB Draken we were building had only one tenth of that.

In the summer of 1955 I got a phone call from Mr. Jones, who offered me a job at Lockheed in Atlanta, Georgia. I had no idea where that was, but after talking it over with my wife, I accepted. Once at the Lockheed plant I hurried to the shop floor where the B-47 was being built. The wing skin thickness was indeed about one inch thick. I stayed about two years in Atlanta doing boring work on the C-130.

Early in 1958 I moved to the Lockheed Structures Department in Sunnyvale, California. Not quite knowing what to do with me, they placed me on the staff of the Structures Manager, Jim Klumpp. There I worked on the development of zero hoop stress domes and other shell problems. In particular, my work on toroidal tanks and curved thin-shell tubes gave my career a boost.

Around 1965 Jim Klumpp took over the Solid Mechanics Laboratory at Lockheed Palo Alto Research Laboratories (LPARL), taking me with him. I was to stay there until my retirement in 1991. My first assignment there was to evaluate the structural efficiency of a variety of shell structures, among them the nested spheres that later was used in the Deep Quest and DSRV submarines. I was in charge of the design of the pressure hulls on both. My work on the Deep Quest was severely criticized by a senior Lockheed consultant: “Every civil engineer knows that a pressure vessel must have a safety factor of 4. Mr Skogh's Deep Quest has only 2”. After I had explained my work (I used a probabilistic approach to the safety problem) to a learned assembly, Dr. Klumpp summarized: “With a safety factor of 4 the Deep Quest will certainly reach the bottom of the sea intact, but it would stay there. If Mr. Skogh’s design reaches the ocean floor intact, it would certainly be able to get up to the surface again”. And so it was. Deep Quest survived. DSRV (Deep Submersible Rescue Vessel) was a different fish, rather than the thick-walled Deep Quest it was a thin-shell design, requiring a different analytical approach.

At the Solid Mechanics Laboratory I met two of the most influential people in my life: David Bushnell with his Bosor program and Bo Almroth with his Stags program. For both programs I became a major user/tester. With Bo Almroth and Frank Brogan I used to take part in the Stags seminars that were given in a variety of locations. I also acted as a consultant and adviser to people who had bought the program. Often people with no sense or knowledge of structural behavior were assigned to use the program only on the basis of their experience with a computer. The California government rejected Stags because it had no “Earthquake” button on it.

One of my more significant Stags analyses was concerned with the postbuckling behavior of a curved panel under shear. (See the figure at the end of this document.) The computer model had 4230 degrees of freedom. A total of some 200 load steps and 35 refactorings were used to reach the ultimate load. The model was defined on three or four boxes of IBM cards, and the solution required almost four hours on the CDC 6600 computer. This was in the year 1973. I used to brag that this was a world record in computer analysis.

Continued existence at LPARL depended on one's ability to obtain funding, either from internal Lockheed sources or from the outside. I managed to obtain outside funding from NASA and the David Taylor Model Basin, supporting me for three or four years.

In November 1989 the Loma Prieta earthquake struck, demolishing my office at LPARL. I never saw it again. All my papers, my life work as it were, were boxed up and placed in storage somewhere. I stayed on a year, working on the Gravity Probe B research satellite. Then I retired.

Selected Publications:

J. Skogh, “Bestämning av vingstrukturvikt”, SAAB LHU-0-V04, 14 Aug 1953

E.H Nickell, J.Skogh , “An Investigation of the Panel Collapse Strength of Stiffened Plastic Hemispheres”, Defence Technical Information Center, AD062898, 01 Oct 1965

R.G. Schwind, R.S. Scotti, Jörgen Skogh, “Analysis of Flexible Baffles for Damping Tank Sloshing”, Journal of Spacecraft and Rockets, Vol.4 No. 1, January 1967, pp 47-53.

C.R. Steele and J.Skogh, “Slope Discontinuities in Pressure Vessels”, Transactions of the ASME, Vol. 37, Series E, Number 3, September 1970, pp 587-605.

Skogh, J., Stern, P., and Brogan, F. A., "Instability Analysis of Skylab Structure", Computers and Structures, Vol. 3, 1973, pp. 1219-1240.

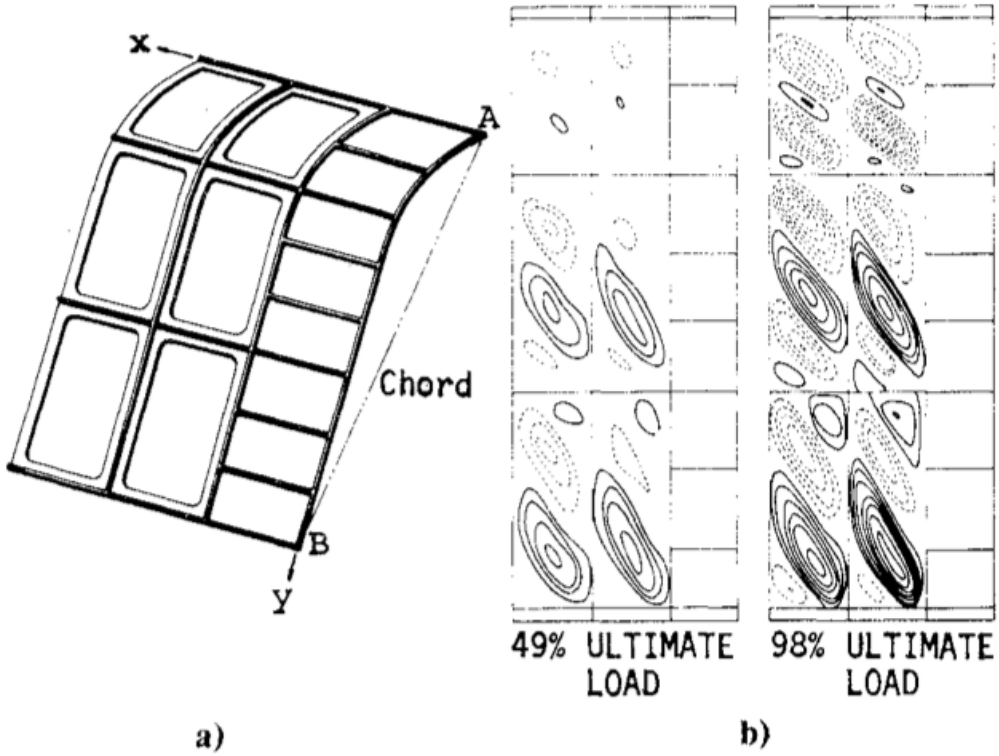
Skogh, J. and Stern, P., "Postbuckling Behavior of a Section Representative of the B-l Aft Intermediate Fuselage", AFFDL TR-73-63, Wright- Patterson Air Force Base, Ohio, May 1973. Also: Google eBook.

Skogh, J., Meller, E., and Brogan, F. A., "The Buckling and the Thereafter of the D-IT Stub Adapter", Lockheed Report LMSC/D358099, January 1974.

A.R. Hunter and J. Skogh, “A Photoelastic and Finite-element Investigation of a Nonsymmetrical Plug-hatch”, Experimental Mechanics, March 1973, pp132-137.

Joseph Kallaby, Bo Almroth, Jörgen Skogh, “Stability and Strength Analysis of Offshore Platform Pontoon Legs”, IASS Conference, June 14-19, 1976, San Diego, California

J. Skogh, “Stags Analyses of Various Submarine Pressure Hulls for Comparison with Tests”. David Taylor Model Basin, 1984-1986.



STAGS finite element model of the B-1 Aft Intermediate Fuselage (from AFFDL TR-73-63, May 1973)