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55th IAA HISTORY OF ASTRONAUTICS SYMPOSIUM (E4) History of Middle Eastern Contribution to Astronautics and Astronomy (3) Author: Mr. Tal Inbar former head of space center at the Fisher Institute for Air and Space Strategic Studies, Israel, [talinbar@fisherinstitute.org.il](mailto:talinbar@fisherinstitute.org.il)

### **The origins of the astronaut program in Israel**

#### Abstract

The paper will portray the origins led to the Israeli astronaut project – that culminated in the spaceflight of Israel's first astronaut colonel Ilan Ramon, on the space shuttle Columbia on the STS-107 mission, that ended in tragedy just minutes before landing on February 1st, 2003. The background of the program will be discussed, starting with the bilateral talks between the US and Israel, on top level, following the agreement signed between NASA and ISA (Israel Space Agency), and the joint ISA – Israel Air Force negotiations on the selection of the astronaut as well as funding required to fulfill the mission. The author's personal connection to ISA, Israel Air Force and the Ramon family have yielded a load of inside information, never published documents, and personal recollections on the beginning of the program. On the technical side of the mission, the MEIDEX experiment will also be addressed – as it was a requirement by NASA – enabling the mission of Ilan Ramon as a payload specialist. The author wishes to thank the IAA history committee for initiating the research on the matter. This paper is devoted to the loving memory of Aby Har Even, the director of Israel Space Agency, who was murdered in May 2021 by Israeli Arabs in the city of Acre.

#### **Introduction**

Ilan Ramon, colonel in the Israel Air Force, was Israel's first astronaut. He travelled to space in the space shuttle Columbia on mission STS-107 in January 2003, the flight ended in tragedy when the shuttle disintegrated

during the re-entry to Earth's atmosphere on February 1<sup>st</sup>, 2003, with all the crew perished. One might think that Israel, as a "Start-up nation", had an organized human spaceflight program, with methodic processes of selecting the astronaut and the scientific experiment to accompanied him on the

mission. But... the real chain of events leading to the historic mission was quite different.

### **The Clinton-Peres meeting**

On December 11, 1995, Shimon Peres, Israeli prime minister met in Washington, DC, with Bill Clinton, US president. The state visit came a mere month after the assassination of Yizhak Rabin, the prime minister of Israel, on November 4<sup>th</sup>, 1995. Among other issues on the agenda, Peres was seeking for something to boost the morale in heart braked Israel. An eternal dreamer, Peres suggested that the US will send and Israeli astronaut to space onboard a space shuttle. In the official statement on the meeting, a White House speaker stated that **"The US agreed to Train an Israeli astronaut"** and launch him in a future space shuttle mission.

It was NOT a part of an Israeli space roadmap, nor it was on the agenda of the Israel Space Agency (ISA). The agency was not informed in advance on Peres's move – and it learned about the vague US promise through the media (...).

As might be expected, the Israeli media echoed the statement, and a lot of un-

based stories began to spread on the identity of the astronaut-to-be.<sup>1</sup>



**Prime minister of Israel Shimon Peres with US president Bill Clinton**

Several letters were received from individuals who offered themselves as astronauts – to which they got an official letter by ISA director Aby Har Even. In one of the letters Her Even wrote: "At this point... we got no official inquiry to start looking for candidates"<sup>2</sup>

### **The initial response of the Israel Space Agency**

In several press accounts, a positive reaction from ISA was quoted, saying that "The Israel space agency already has several names of nominees to the position of the first Israeli astronaut".<sup>3</sup> Furthermore, Har Even wrote that: "If we will be asked to present a list of astronaut candidates, we will take your

<sup>1</sup> One of the stories was published in Israel leading daily newspaper, "Yediot Aharonot", naming MD Eran Schenkaer as a prominent candidate to fly.

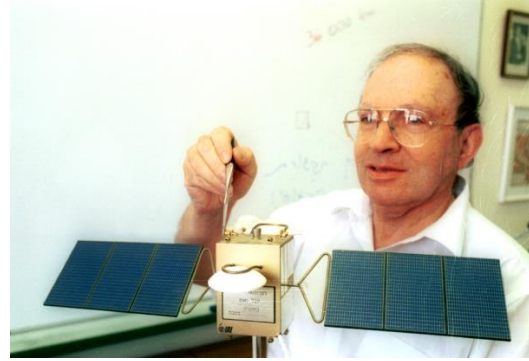
<sup>2</sup> Aby Har Even letter to Michael Liarzi, dated 27.12.1995, from Israel State Archives

<sup>3</sup> Yediot Aharonot, December 12, 1995

proposal under consideration, among others, under NASA guidelines, and the guidelines (yet to be discussed) of the Ministry of Science".<sup>4</sup> This is to demonstrate that the POLITICAL statement on an Israeli astronaut was not yet translated into an official policy by the government.

Through a long and ongoing process, the author is working on revealing of Israel Space Agency and Ministry of Science files from the Israel state archives. On the batch of documents obtained for this paper, several amazing revelations were already made.<sup>5</sup>

For example, on a letter from ISA director to director general of the ministry of science and technology, Har Even wrote: "Since the subject of an Israeli astronaut pops out occasionally, and recently on the meeting of ISA chairman Yuval Neeman with NASA administrator Dan Goldin, I suggest TO "KIIL" the subject, or to adopt other decision on the upcoming meeting with the minister".<sup>6</sup>



**Prof. Yuval Neeman, chairman of the Israel space agency, 1996<sup>7</sup>**

The political stunt (the outcome of Peres's visit to DC) caught ISA off-guard; The astronaut project refused to vanish from the media and throughout 1996 numerous letters and meetings were held, and it became clear that NO astronaut will fly on a US space shuttle, UNLESS he will be accompanied by a significant scientific experiment.

It is very interesting to read in the internal correspondence within the Israel space agency and the ministry of science, that the Israeli astronaut is not only not part of the roadmap, but even AFTER an agreement between ISA and NASA was signed, the astronaut project was still totally outside of the work plans of 1997.1998. and 1999, and not a single USD was allocated from the ministry of science to the astronaut program.

<sup>4</sup> Ibid

<sup>5</sup> The process of revealing the files continues.

<sup>6</sup> Letter from 13.8.1996

<sup>7</sup> From the Israel National Library. Neeman is pictured with a model of Israel's first communication satellite, AMOS-1

(The Israeli astronaut was to be a payload specialist) – and this was a mandatory demand by NASA.<sup>8</sup> This was later also clear to the Israeli Air Force commander Eitan Ben Eliyahu, on his meeting with NASA administrator Goldin on November 5, 1997.<sup>9</sup>

### **ISA-NASA meetings**

On May 1996, a meeting was held between NASA administrator Dan Goldin and ISA Chairman Prof. Yuval Neeman.<sup>10</sup> On the meeting the Israeli astronaut was discussed, but only at the end of the meeting, and in general terms. and NASA administrator stated that the astronaut "will have to be selected from several candidates" and that a strong background in science is needed, preferably Earth sciences.<sup>11</sup> Furthermore, it was in this meeting that Goldin said to his Israeli counterpart that a major science experiment must be part of the mission since the astronaut has to be a payload specialist and not just spaceflight participant such as the

Saudi astronaut, Sultan bin Salman Al Saud, who flew in space on space shuttle Discovery in 1985. Although Al Saud was a payload specialist, no major or significant science experiment was provided by the Saudis, which led to much criticism within the US,



**ISA director Aby Har Even and NASA Administrator Dan Goldin, 1998.<sup>12</sup>**

### **The issue of funding**

The budget of the Israel space agency at the time was so tiny (sometimes less than 2 million USD **PER YEAR**) that it was impossible for ISA to fund the astronaut project. It was the Israel Air Force (IAF) that jumped on the opportunity to send a pilot to space, not for the scientific value of the mission,

<sup>8</sup> An outcome of the flight of Saudi prince to space and the internal US criticism on the matter.

<sup>9</sup> Minutes of the meeting were not yet released by any official Israeli organization but are part of the file of correspondents of Ilan Ramon, obtained by the author.

<sup>10</sup> On Aby Har Even see the author's paper "Aby Har Even, a one-man space agency", IAC 2015 E.4.3.8

<sup>11</sup> Minutes from the meeting, sent to the Israel's minister of science (among others) on May 5<sup>th</sup>, 1996, by Aby Har Even. The document was obtained from the Israel State Archives.

<sup>12</sup> The picture provided to the author by Aby Har Even in 2015

rather for PR purposes – since the 50th anniversary of the air force (and of the state of Israel) was approaching, so an IAF astronaut was good for the Air Force.

Where did the two million dollars for the experiment come from? Prof. Zeev Levin of the Tel Aviv University, Principal Investigator of MEIDEX was quoted in 2003: "From all sorts of sources that I do not even know all of them. Everything came from the Israeli space agency, which transferred the money to the university." But it is not possible that a budget of this magnitude came from the space agency: the agency, which belongs to the Ministry of Science, is a small and resource-poor body. Its annual budget is about two million shekels and employs two people: an administration, Har-Even, and a secretary. At the agency's last press conference with the experiment scientists, Har-Even refused to answer the question of funding.

Through the personal archive of Ilan Ramon, obtained by the author, two interesting letters can shed light on the issue. The first letter was from Aby Har Even, director of Israel Space Agency.<sup>13</sup>

<sup>13</sup> From December 17, 1997, to director of IDF and MOD R&D head, Brig. Gen. Uzi Eilam, from the author's archive

He wrote to Brig. Gen. Uzi Eilam, head of the joint IDF and MOD R&D directorate: "As you know, the experiment<sup>14</sup> has three parts: Acquisition of the cameras and adapting them for space operation; Conducting ground experiments and the work of scientists prior, during and post flight.

According to the understanding with NASA, we must deliver NASA a through description of the experiment and get their approval.

By doing so, it will be an Institutional Obligation by the Israel Space Agency....

Since the question of funding arise in every one of the discussions, and I know that there are understandings between you and the air force commander on financing the project, I would like to know the figures".

Har Even warned that providing NASA with the details on the experiment without proper means of deliver it, will have a severe implication.

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<sup>14</sup> MEIDEX, The Tel Aviv University observation on dust storms

The ISA letter was received at the IAF commander the next day, and a reply was received by December 21, 1997, from Head of R&D Gen. Eilam:<sup>15</sup>

"Indeed, there are understandings with the Air Force. After another conversation with IAF commander today (21/12/1997) I can assure you that the budget arrangement is in effect.<sup>16</sup> Therefore, you can deliver NASA the document and **you can be assured that the system is backing the activity**".<sup>17</sup>

Years later one of the scientists, whose proposal for the space flown experiment was rejected, said that once the money for the project was given by the Ministry of Defense the experiment was chosen because NOT because of its scientific value rather, it was a feasible experiment that the Ministry of Defense liked."<sup>18</sup>

Even in 2003, the question of financing the project was vague: At a press conference prior to the launch of STS-107, ISA director was asked about the funding. "For security reasons," Har-

Even explains, "it is better not to raise these issues at the moment."

### **The Israeli Air Force role**

In mid-1996, Major General Eitan Ben Eliyahu was appointed commander of the Israeli Air Force. Ben Eliyahu saw space as a vital expansion channel for the army, and he was even quoted as saying: "This will be a necessary condition for the operation of the Air Force in the future." Ben Eliyahu was fascinated by the glory NASA gained after the goal (landing a man on the moon) was successfully conquered, and wanted to restore it, in a small way, also in Israel "for development and scientific and security research." Shortly before he was appointed Air Force commander, Ben Eliyahu convinced the chief of staff Amnon Lipkin-Shahak worked to send a pilot from the corps into space, and the latter referred the request to Shimon Peres.<sup>19</sup>

On December 11, 1995, Peres arrived as prime minister to visit Washington and presented Bill Clinton with the idea of sending an Israeli astronaut. Clinton gave general consent to speak.

<sup>15</sup> The letter is included in Ilan Ramon's file of letters from 1997 and is part of the archive obtained and maintained by the author.

<sup>16</sup> Meaning that the IAF will pay for the astronaut stay in the US and the MOD will pay

for the experiment – hence the space agency will pay nothing.

<sup>17</sup> The term "system" is referred to in Hebrew to the defense establishment

<sup>18</sup> Haaretz, January 2003

<sup>19</sup> See the article in Haaretz, 22.1.2003.

According to Ben Eliyahu, "there was nothing written anywhere. It came up in half humor at some dinner," but the joke gained momentum.<sup>20</sup>

"From the moment I was appointed, I took advantage of the fact that I could pick up the phone to NASA and say 'Hello, Air Force Commander,' and my phone could not be slammed," continues Ben Eliyahu. "NASA, Dan Goldin, who is also a Jew."<sup>21</sup>

General Ben Eliyahu continued to put pressure on politicians and ambassadors, until in 1997 he was promised an Israeli seat in a course starting next year. At this point Ben Eliyahu concluded that it was not possible for an astronaut, a fighter pilot in the Air Force, to walk around idle on a space shuttle. He turned to Maj. Gen. Yitzhak Ben-Israel, who was then head of the Ministry of Defense's weapons development and technological infrastructure at the ministry of defense<sup>22</sup>, and told him: "Itzik, let's be in charge of the matter, and you will also have a say in what the experiment will be about."<sup>23</sup>

Ben Eliyahu wanted an experiment with military applications. "But as much as they wanted, the army and the Ministry of Defense could not launch a military test on NASA's shuttle." Goldin also told me then that it was impossible for the test to look military".

### **Choosing an astronaut**

It was known for years that Since the Air Force was willing to take all the funding of the astronaut stay in the US, it was cleared from day one that the astronaut will be a pilot (even though his role in the space shuttle was payload specialist) and NO public or civilian section committee was established on the matter. A letter from Israel space agency director Har Even to the director general of the ministry of science dated June 2, 1997, confirmed it clearly. In the part of the letter devoted to the astronaut project Har Even writes: "The IAF commander was given by me a list of candidates who, independently, approached the space agency. Due to his own considerations, he chose the candidate for the spaceflight, Colonel I.R".<sup>24</sup>

<sup>20</sup> Ibid

<sup>21</sup> From a 2003 interview

<sup>22</sup> And is the chairman of the Israeli space agency from 2004

<sup>23</sup> From the interview made by Tamara Traubman, Haaretz, 23.1.2003

<sup>24</sup> The letter was released by the state archives by the request of the author.



**Colonel Ilan Ramon, Israel's first astronaut**

So, somewhere around May 1997, Ilan Ramon was personally nominated by the Air Force Commander as Israel's first astronaut.

Colonel Ilan Ramon, an F-16 pilot, was just ended his term as head of munition directorate at IAF HQ, so he was approached by the IAF commander and asked, "if he want to fly to space".<sup>25</sup> The candidate was not publicly announced until 1998. On official minutes of meetings at the space agency he was referred to (at least by the end of 1997) ad "colonel I.". It was in 1998, that a second, backup astronaut, also from the Air force, was selected and both went to the Johnson spaceflight

center in Houston, to begin the astronaut training.

**Choosing the experiment**

Many meetings and discussions were held in 1997, to choose the adequate experiment for the flight of an Israeli astronaut as payload specialist. Official, open to all call for proposals was not issued, rater ISA approached the Technion and the Tel Aviv University, and created a scientific advisory board to choose the winner.

The experiment selection process raises difficult questions. Har-Even, director of the Israel Space Agency, claimed that the experiment was chosen for reasons of scientific excellence, and that the agency reported to researchers at the universities about the space experiment and asked to submit research proposals. However, climate scientists say that this request did not reach them. The chief scientist of the Ministry of Science, Prof. Hagit Messer-Yaron<sup>26</sup>, says: "There was no 'calling' for experiments in the procedure of the Ministry of Science. Through us it did not pass, I do not know if it passed in the procedure of another government ministry." Prof. Daniel Rosenfeld of the Hebrew

<sup>25</sup> This "selection process" was mentioned many times by Ilan Ramon, with much amuse.

<sup>26</sup> In 2003



University, which conducts most of its research in Israel in the study of the effect of dust on rain, says that he learned about the experiment "only when everything was already closed." Surprisingly (and perhaps not), many of the people who did know about the possibility of submitting related proposals to the Air Force. "We turned to those we know who do in the field," admitted Yitzhak Ben-Israel.<sup>27</sup>

From the account that are available by the author, the MEIDEX experiment<sup>28</sup> was selected early in 1997, and that technical issues (such as the camera for the experiment, filters and so on were discussed by the space agency extensively throughout the year). A lot of activity was carried out to meet the December 1997 deadline of delivering NASA both the technical reports and the commitment to build the experiment to accompany the Israeli astronaut.

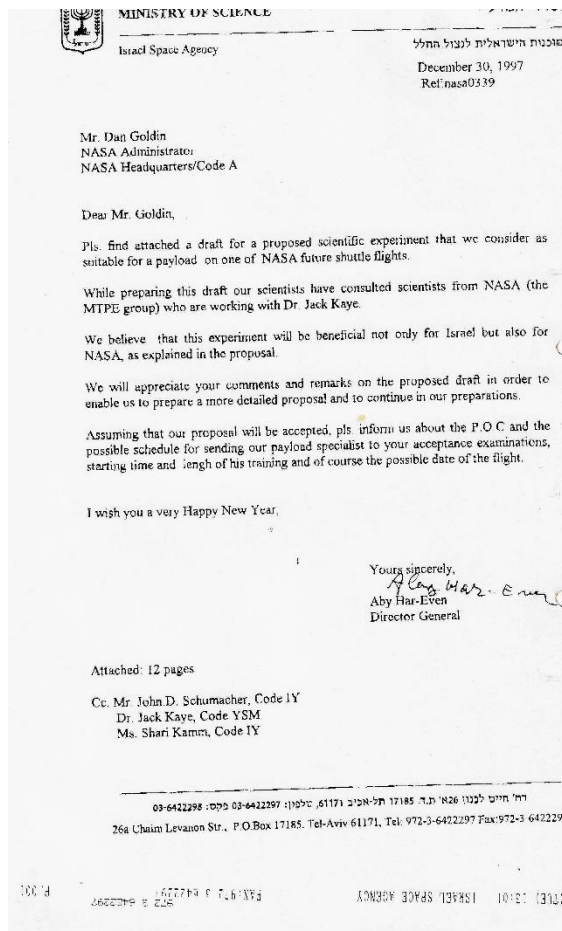
The **Mediterranean Israel Dust Experiment**, or Meidex, was a research instrument by the Israel Space Agency and NASA to find out the details about mineral dust transport through the air in the Mediterranean Sea and tropical Atlantic Ocean. The phenomena of

aerosol transport around the planet, especially desert dust, is thought to play a critical role in climate change in many parts of the world. Packaged inside a canister in space shuttle Columbia's cargo bay, the Meidex hardware — an array of cameras and sensors tuned to the wavelengths to best observe dust clouds moving through Earth's atmosphere — looked down on Earth as Columbia orbited the planet. NASA and the Israel Space Agency carried out the Meidex experiment jointly during STS-107, the final mission of Columbia. Astronaut Ilan Ramon operated the research platform. The experiment's cameras and sensors were mounted inside a Get Away Special Canister mounted on a support structure that went across the cargo bay. Although the Meidex was housed in the cargo bay, Ramon could operate the equipment from inside the pressurized areas of space shuttle Columbia.

<sup>27</sup> Ibid

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<sup>28</sup> The experiment will be thoroughly described in the second paper at the series devoted to the Israeli astronaut.



**The December 30, 1997, official letter from ISA director to NASA Administrator, confirming the Israeli obligation on the scientific experiment – a mandatory part of the astronaut program<sup>29</sup>**

**Criticism on the experiment**

"The whole story is unnecessary, including the experiment," says cosmologist Prof. Giora Shaviv, the most critique of the astronaut program, who stated his views prior and during

<sup>29</sup> From the Israeli state archive, obtained by the author in July 2021

the mission. "You do not need an astronaut to hold the camera in space. It is enough to put it on a satellite and hold it there for two years. Israel does not need such a dumb gimmick, an experiment in space dust. It's just throwing dust in people's eyes." .... "Was a technological achievement for the Saudis? Suri in space. So now we are in good company of Saudi Arabia and Syria. We finally managed to reach that level." <sup>30</sup>

**Preliminary Conclusions – the formative years of 1996 and 1997**

The Israeli astronaut program was born as a political stunt and because of the Air Force continuous pressure. Only after the funding issues were solved (MOD money and IAF budget were secured), the space agency became involved and committed to the project – with two vectors: the scientific experiment on one hand, and the astronaut training on the other.

The public and the media were not aware on real time (and many are still not aware decades later) on all "behind the scenes" dramas of the program.

<sup>30</sup> ibid

The next paper will be devoted to the year 1998, in which Ilan Ramon travelled to the US to start his training for the mission, and the MEIDEX experiment started to take shape.

It should be emphasized that although the author interviewed most of the key people, and many of the people involved in the astronaut project are colleagues and friends, it is Documentation that make the difference, from oral history to official accounts of the events. Furthermore, only through a long and enduring process of revealing documents from the state archives, it is possible to shed lights on the events. Since not all the papers are available at the time, and update of the paper will be needed in due time.